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LECTURE II.*

(Delivered on March 3rd, 1921.)

IN my first lecture I spoke of the fate of the sugar which is in the blood after a meal, and in this lecture I shall speak of some of the conditions under which sugar is excreted in the urine.

CONDITIONS UNDER WHICH SUGAR IN EXCRETED IN THE URINE.

It is incorrect to say that every patient who passes a reducing substance in the urine is suffering from diabetes mellitus. Before that conclusion is possible the nature and amount of the reducing substance must be investigated, and even if dextrose is present the diagnosis is not necessarily correct. Fehling's solution is still usually employed in testing for sugar, and if the test is going to be of use its faults and fallacies must be learnt. First, the solutions A and B must be freshly mixed, for an old solution may reduce itself. Secondly, equal quantities of urine and mixed solution should be boiled separately, mixed when boiling, and not re-heated. If sugar is present in a concentration of over 0·5 per cent. a reduction takes place almost instantaneously; if a concentration of 0·1 or 0·2 per cent. be present the reduction may not take place for five or even ten minutes.

When a delayed reduction of this kind occurs it is always necessary to confirm the presence of sugar by other tests—e.g., Benedict's or Nylander's. In order to be quite certain of the presence of a sugar it is necessary (1) to do a fermentation test with yeast to see if the sugar will ferment; (2) to determine whether the plane of polarised light is rotated to the right or left; (3) to prepare the glucoasazone and to determine the melting-point of the crystals.

Fehling's solution, unfortunately, is reduced by other substances—e.g., uric acid, creatinine, and salicyluric acid, and it would lead to less confusion if Benedict's solution were substituted, as the latter is not affected by these other substances. Benedict's solution is used rather differently, as 5 c.cm. of the reagent and eight drops of urine are boiled together for about two minutes, and then allowed to cool. If only a trace of sugar is present precipitation takes place slowly and is green in colour. The limit of detection is about 0·08 per cent.

Sugars other than Dextrose Found in the Urine.

The other sugars which are found in the urine besides dextrose are lævulose, lactose, and a pentose.

Lævulose may occur in urine either alone or with dextrose. It is a somewhat rare occurrence for lævulose to be present by itself, and as I mentioned in my first lecture, it is regarded as a sign of liver inadequacy. As lævulose gives the same reduction test as dextrose it can only be differentiated (1) by determining whether the solution is lævorotatory, (2) by using Seliwanow's test. The presence of lævulose in the urine does not necessitate a diagnosis of diabetes. It should, however, direct an inquiry into the state of the liver as far as that is possible. Mild restrictions of the carbohydrates are usually sufficient to prevent the excretion of lævulose.

Lactose is only present in the urine of women who are lactating or who have had to cease suckling a child, and in infants with gastro-enteritis.[1] The reduction with Fehling's solution is not quite the same as with dextrose, as it often does not reduce copper unless the mixture is re-heated, but in the last case I saw that the urine reduced Fehling's solution just as dextrose does. This sugar is dextrorotatory, and the osazone is difficult to prepare; it does not ferment with yeast. Once the diagnosis is established the patient needs no treatment, as the condition is one which will right itself in time. An ingenious method of distinguishing between these sugars by means of the ferment action of various higher fungi has been devised by Castellani.[2]

Pentosuria is a rare freak, and until recently no case had been recorded in England, although Sir Archibald Garrod sought for it diligently. Cammidge,[1] however, has recently reported no less than 7 cases; of these patients, 3 were Jews and 2 were Greeks. The sugar reduced Fehling's and Benedict's solutions, but only slowly, as the amount of the sugar was small. Bial's test in the best test for a pentose, and the presence of glycuronic acid, which also gives this test, can be excluded, as it does not give a positive test with Benedict's solutions. Pentose is not fermented by yeast and is usually optically inactive, but may be dextrorotatory. Removal of all carbohydrates from the diet caused no reduction in the pentose, but a diminution in the protein caused a decrease in the pentose output.

So-called Diabetes Innocens.

Dextrose is excreted in the urine in a number of other conditions besides diabetes—e.g., in exophthalmic goitre and acromegaly, and after adrenalin injections—but it would take me too far afield to describe all these types. I will therefore confine myself to the cases of true diabetes and to those groups of rare cases in which sugar is excreted without causing any symptoms, dealing with this latter group first. It has only been recognised comparatively recently that there are patients who pass sugar year in and year out without suffering any ill-effects.

Klemperer,[3] in 1896, described the case of a man who was suffering from renal disease, but also passed a little sugar. Lüthje[3] and Bönninger[4] reported similar cases, and Lüthje observed that the amount of sugar excreted bore no relation at all to the amount of sugar eaten and that the amount of sugar in the blood was less than normal. As these cases all had albuminuria the name "renal diabetes" was suggested. Since then numerous cases of a similar type, but with no signs of renal disease, have been described and that name has been abandoned. Salomon[5] has suggested the title of "diabetes innocens" as the disease seemed such an innocent one. This name is a bad one as the word diabetes indicates that much urine is excreted and in these cases there is no increase in the output of urine. However, the name is now well recognised and cannot well be altered. During the last few years a good many more of these cases have been described, and the total number is approaching 30.[6 7 8 9 10] Pavy undoubtedly recognised this type, as in 1908 he told a man, whom I saw afterwards, that he had "a family idiosyncrasy involving a slight defect of the carbohydrate assimilative power," and added that he had seen similar cases.

The characters of the class are as follows:—

The sugar is usually discovered by accident and is small in amount, less than 5 g., often only 1 or 2 g., in the day. The amount of sugar excreted does not depend on the amount of carbohydrate eaten, and a dose of 100 g. produces no increase in the amount of sugar. The amount of sugar in the blood lies within normal limits, and in my cases it responded to a dose of carbohydrate in the usual way. Salomon stated that the level of the blood sugar was unaltered by a dose of sugar after one hour, but he worked before it was recognised that the rise in the blood sugar was a rapid one, followed by a rapid fall. The after-history of these cases shows that whether they are treated or not, they continue to pass sugar in small amounts, and that in the end no restrictions are placed on them. As to causation practically nothing is known. The condition is apt to occur in several members of a family. Salomon described 10 cases; 5 of them belonged to two families, and two first cousins of one of the families were affected; while a sixth patient had a sister who passed sugar. I have only seen three of these cases, but one of the patients had a sister and brother who passed sugar. Consanguinity does not seem to play any part in the causation.

Sugar in the Urine with no Symptoms of Diabetes.

There is another group of cases[10] which differs from this group in some points.

The group might almost be called the St. Bartholomew's group, as two of the cases were patients of Sir Archibald Garrod, the third was one of the residents of the hospital, two others were officers (one naval and one military) who came to the hospital to have their blood sugar tested, and the sixth case was reported by Dr. Parkes Weber,[11] an old

* Lecture I. appeared in THE LANCET of May 7th, p. 951.

St. Bartholomew's man. Besides these 6 cases I only know of 3 others, those reported by Bailey,[12] and Lewis and Mosenthal,[13] and perhaps by Murlin and Niles,[14] which seem to resemble them. Most of the cases were discovered accidentally. The first one came to Great Ormond-street, complaining of nocturnal enuresis, and the sugar was discovered in the course of a routine examination. Two years later the urines of the father, mother, and brother were examined and that of the brother contained sugar. Two cases were discovered during examination for life insurance. On man was ailing and the sugar was found in the course of the routine examination. None of the patients complain of thirst and they have no symptoms which suggest diabetes.

The chief characters of the group are:—

The amount of sugar excreted is fairly large, 10-30 g. a day, which is much larger than in the case of the previous group. The amount of sugar excreted seems to be almost independent of the amount of sugar eaten. In one of Garrod's cases the sugar output and sugar intake is shown in the following table:—

Sugar intake (grammes).	*Sugar output* (grammes).
64	39-42
56	20-33
28	23-30
0	20

The concentration of sugar in the urine is high—often over 4 per cent. if the urine is collected immediately after a meal. This, again, contrasts with the other group, in which it is usually less than 0·5 per cent. Starvation for a whole day reduces the sugar to a mere trace or to nothing at all. Starvation did not affect the patients adversely, and one of them used to play tennis both morning and afternoon of the hunger day. The sugar returns again as soon as food is given, even if the food contains no carbohydrate. The level of the blood sugar taken when the patient is fasting lies within normal limits, yet sugar is often excreted during a fast.

Sugar Tolerance.

This must be tested by giving a dose of sugar or a carbohydrate meal and determining the effect of the meal on the level of the blood sugar. The urine is collected before the experiment begins and for each hour afterwards. The curves, one from a published case (Fig. 1), the other from a recent case (Fig. 2),

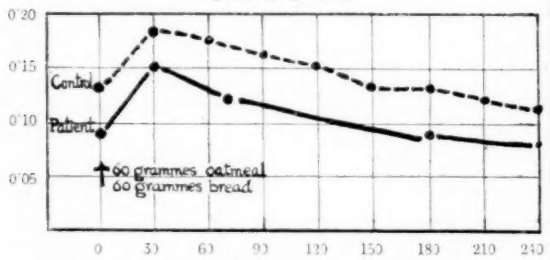

FIG. 1.—Showing the effects of 60 g. oatmeal and 60 g. bread on level of blood sugar.

show that (1) sugar is excreted when the level of the sugar is normal, though in one case no sugar was excreted on one occasion; (2) the response to the dose of sugar is no greater than that of a normal individual to a similar dose; (3) more sugar is excreted when the level of the blood sugar is raised: in one case sugar continued to be excreted in considerable amounts, although the blood sugar had fallen almost to the original level.

The criticism has been made that these may be mild cases of diabetes, but a mild case of diabetes differs from this type of case in response to the above tests. A mild diabetic who is passing 20-30 g. of sugar in the day will respond to the tests in the following way: (1) the sugar will not be present in each specimen—the urine after the meal will contain most sugar and the fasting urine will not contain any; (2) the amount of sugar will bear some relation to the amount of carbohydrate in the diet; (3) a starvation day will cause all the sugar to disappear; (4) on gradually increasing the diet no sugar will appear for an indefinite period depending on the severity of the disease: (5) if the sugar tolerance is tested with a dose of sugar and the blood

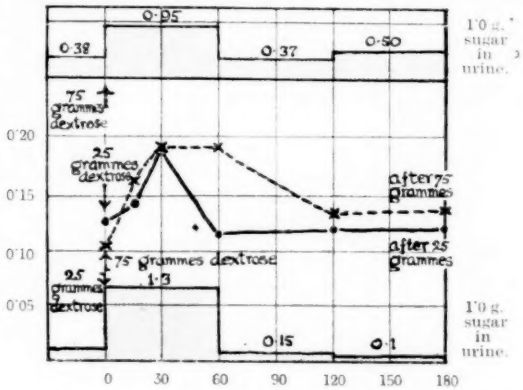

FIG. 2.—The effects of 25 and 75 g. sugar on level of blood sugar (shown by curves); and on sugar excretion in the urine (shown by stippled graphs).

curve determined at the same time, the picture is very different. (Fig. 3.) The figure shows that no sugar is passed when the blood sugar is normal, but that the sugar in the blood increases rapidly after the meal and goes up much higher than in the normal person, and that sugar is excreted when the blood sugar is high.

No Treatment Required for Diabetes Innocens.

It is very important to make this distinction clear, as it is a mistake of the first magnitude to make a diagnosis of diabetes innocens unless the case has been tested in the way I have described.

A case of diabetes innocens needs no treatment, but if the patient is treated as a diabetic no harm will ensue; sooner or later he will abandon the treatment with no ill-effect.

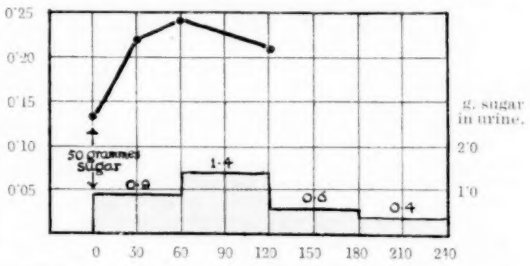

FIG. 3.—Showing effect of 50 g. sugar on level of blood sugar and on sugar excretion in the urine.

The sister of one of the patients in group 1 endured a fairly strict treatment for two years, but then abandoned it. Later on she married and bore a child with no ill-effects. The child does not pass sugar, but the mother still does so. But if a mild diabetic is treated as a case of diabetes innocens he will inevitably grow worse. I have known this happen on one occasion in the early days of blood sugar determination before the cases had been properly worked out. The man was a diabetic of about two years' standing, and he had become sugar free with carbohydrate restrictions. At this stage his case excited interest, and his blood sugar was determined and found to be normal. The patient was therefore thought to belong to the innocens class, and no diet restrictions were imposed. Two years later he was shown to me as a case of diabetes innocens which had been converted into a case of true diabetes mellitus. His old notes were available, and we were able to obtain the story which I have told you. Unfortunately the man did not respond to treatment as well as he had done before, and three years later he died. The diagnosis of diabetes innocens must therefore be made with great care.

Prognosis as yet Uncertain.

The prognosis in these cases is a little uncertain, as they have not been known long.

Dr. Parkes Weber's case has been watched longest but not continuously. She was in St. Mary's Hospital 35 years ago, and then passed 30 g. of sugar a day. She was in the German Hospital five years ago for a multiple polyneuritis of uncertain causation which got quite well. She was still passing about 30 g. of sugar in the day on a mixed diet. Sir Archibald Garrod's first case has been watched for nine years; the girl, first seen at the age of 8, is now 17, and the boy, first seen at the age of 12, is now 19. Both of them seem very well and lead active lives with no restrictions. One of the men, first seen nine years ago, is still quite well. The other two cases are only of short duration, less than two years. Bailey's case has been watched for eight years. It is clear that these cases are of an innocent type, but various questions arise in connexion with them. Should they marry? Should they live in a hot climate? What should be the attitude of the life insurance offices to them? So far two of my male patients have married, and one of them only came to me to know if he might marry. It was with considerable diffidence that I answered Yes, and I failed to satisfy the prospective father-in-law completely. Hot climates do not seem to agree with cases of the milder type of diabetes innocens. One of Garrod's patients was unwell in India. One of mine in group I became very slack in Egypt and lost a great deal of weight. In spite of this evidence, however, one of the recent patients persisted in going to Assam, though another one was deterred.

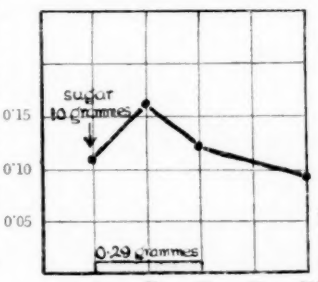

FIG. 4.—Showing effect of 10 g. sugar on level of blood sugar and on sugar excreted in the urine.

The correct attitude of the insurance company is still more difficult. The disease as an entity is a new one; the cases have only been fully worked out since 1916. It is perhaps too much to expect that the innocency of the disease will be admitted, but I believe that the time will come when a case which has been properly worked out will be accepted at low rates by the insurance offices.

The treatment of these cases does not seem to matter. One of my army officers was treated on modern lines for three months without any effect. The only possible line of treatment lies in the discovery of how to alter the leak-point, and of that we at present know nothing.

Exceptionally Large Sugar Excretion.

In the two groups I have described the sugar output was less than 10 and about 30 g. per day respectively. Galambos[15] has described a case where 100–150 g. of sugar per day were excreted. These amounts are very large and in the ordinary way the patient would undoubtedly be considered to be a true diabetic. The case was carefully worked out and it seems certain that sugar was passed, although the blood sugar was not raised. As the amounts of sugar which were excreted are so large I have thought it better to place this case in a separate group, of which it is the only member, although it only differs in degree from the other groups.

Position of Leak-points.

All the cases I have seen in the two groups of diabetes innocens have leaked sugar with a normal blood sugar of 0·09 to 0·11. It is difficult to believe that there is a hard-and-fast division between the diabetes innocens class and the healthy people. So far I have only come across one patient in whom the question has arisen.

He is a boy, aged 6, who has been passing sugar irregularly for the last two years. He has been fairly strictly dieted by Dr. Ernest Young, and seems quite well. He can eat 15 g. of sugar in the form of bread, &c., at each meal of the day without passing sugar. (Fig. 4.) A dose of 10 g. of sugar sent up the blood sugar from 0·11 to 0·16 in 30 minutes, but it was down at 0·12 in 60 minutes and to 0·09 at the end of two hours. During the hour he passed 0·2 g. of sugar, and none in the next hour. His leak-point is set somewhere between 0·12 and 0·16. I am still in doubt as to the correct diagnosis, but I am in no doubt at all as to the correct treatment. With our present knowledge he must continue to be treated as a true diabetic with restricted carbohydrates. To treat him as a member of a new innocens type would be far too great a risk.

In the class of diabetes innocens the leak-point is set at the 0·10 or 0·12 level, and consequently sugar escapes all the time, but most of all after a meal. In the cases that I am now going to describe, the leak-point is not set at 0·20, but may be at 0·25 or 0·27, or higher.

The first case to which I want to refer is one which Garrod[16] first reported in 1912. The patient, a man of 58, came to St. Bartholomew's Hospital in 1909 complaining of thirst and jaundice of three days' duration. The liver was enlarged, reaching four fingers'-breadth below the costal margin; the total output of sugar was not large, 42 g. a day. Under the dietetic treatment then in vogue the sugar was reduced to 4 g. a day in the course of five weeks; the jaundice disappeared in two weeks. After discharge from the hospital the sugar disappeared from the urine and did not return, although the patient ate a liberal diet and no sugar was passed after 100 g. Garrod reported the case in 1912 as one of diabetes with complete recovery of tolerance. In 1915 I[17] made an estimation of the blood sugar at Sir Archibald Garrod's request. He was not passing any sugar at this time, but his blood sugar was 0·26 g. per cent. and a week later it was 0·27 per cent.[10] In 1919 I made sugar tolerance tests with 25 and 50 g. of sugar. (Fig. 5.) The dose of 25 g. did not raise the blood sugar above 0·185 and no sugar was excreted. The dose of 50 g. raised the level of the blood sugar to 0·30 at the end of one and a half hours and 1 g. of sugar was excreted in the urine in two hours. A consideration of the curves shows that the patient now has a distinctly lowered sugar tolerance, but that he does not pass sugar as a rule because the leak-point is set at an unusually high level.

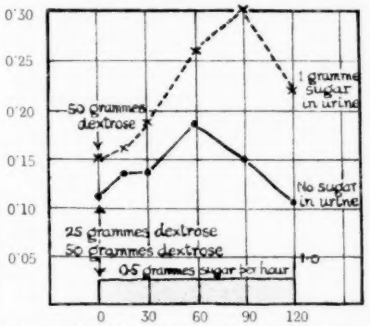

FIG. 5.—Showing effect of 25 g. and 50 g. sugar on level of blood sugar, and effect of 50 g. sugar on sugar excretion in the urine.

The leak-point may also be raised in cases of severe diabetes. I[17] estimated the blood sugar of one man six times on each of two successive days. (Fig. 6.) On the first day 40 g. of sugar in the form of carbohydrate were eaten, and 45 g. of sugar were excreted in the day period of 12 hours and 55 g. in the night period. The blood sugar varied between 0·36 and 0·29 during the day. On the second day tea and coffee with no milk and sugar were given, and only 2 g. of sugar were excreted in the day urine and none at night. The level of the blood sugar varied between 0·27 and 0·29 throughout the day. This man went out of hospital sugar free, and remained well for two and a half years during the war period in spite of its great difficulties about food. He then developed phthisis and died of tuberculosis six months later, three and a half years after the first symptoms of disease.

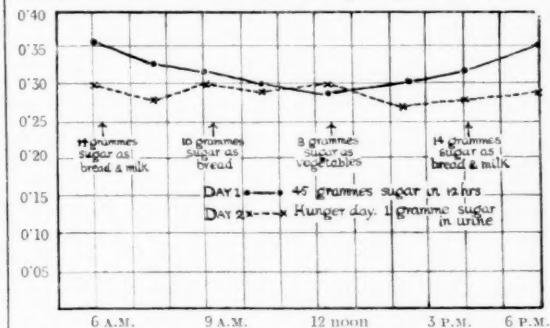

FIG. 6.—Showing level of blood sugar after meals during the day, and on a hunger day.

The blood sugar may be considerably raised in pneumonia and nephritis without sugar being excreted, figures up to 0·28 being reported.

Two Cases in Children.

Lastly,[18] I wish to speak of a little group of cases in children which possess several peculiar features, as the disease is always considered to be more serious in children than in adults. The group consists of two patients, a girl, aged 11, who has been under observation five years, and a girl, aged 10, who has been under observation two and a half years. The case reported by Porter Parkinson[19] may belong to this group. The two girls came to hospital chiefly because they had pruritus vulvæ. They are both very small for their age; a year ago they were both 4 inches under the average height and 11 lb. under the average weight for their age. One of them, E. B., has grown 3 inches in the last year, but the other one has grown ¼ inch only. The girl, E. B., had a sugar tolerance of about 50 g. of sugar in May, 1916, and of 70 g. in October, 1920. The girl, E. L., has a sugar tolerance of about 12 g. on a diet of 400 calories. The blood-sugar curves of this group of children are very interesting.

E. B. (Fig. 7).—A dose of 15 g. caused the blood sugar to rise from 0·16 g. to 0·29 g. in one hour, and it gradually fell

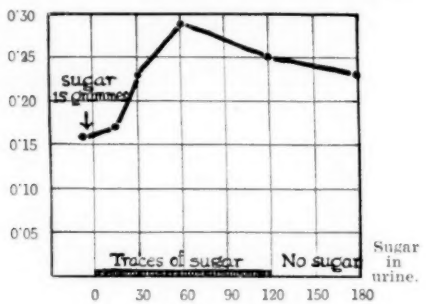

FIG. 7.—Showing effects of 15 g. sugar on level of blood sugar.

in the course of the next two hours to 0·23 g. In the first two hours there was a trace of sugar in the urine, but it was too little to estimate with the polarimeter, and none at all in the third hour.

E. L.—On Nov. 7th, 1919, a dose of 10 g. of sugar caused the blood sugar to rise from 0·15 g. to 0·30 g. at the end of one hour, and at the end of three hours it was still at 0·23 g. In the first 90 minutes 1·5 g. were excreted in the urine, and in the next 90 minutes 1·1 g. (Fig. 8.) On July 13th, 1920,

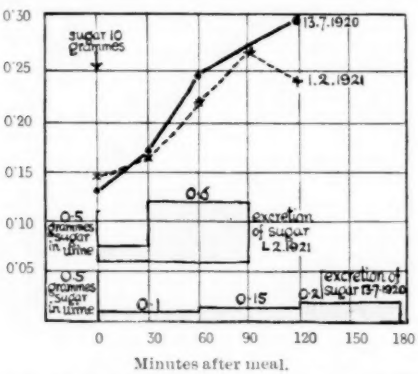

FIG. 8.—Showing effect of 10 g. sugar on level of blood sugar and amount of sugar excreted in urine on two given dates.

a dose of 10 g. of sugar raised the level of the blood sugar from 0·13 g. to 0·24 g. in one hour, and at the end of two hours it was still at 0·30. In the first hour 0·10 g. was excreted, in the second hour 0·15 g., and in the third hour 0·20 g. On Feb. 1st, 1921, a dose of 10 g. of sugar raised the level of the blood sugar from 0·145 g. to 0·26 g. in 90 minutes, and it had begun to fall after 120 minutes. Although the blood sugar did not rise so high or so rapidly, about 0·8 g. of sugar was excreted. The level of the leak-point seems, therefore, to have fallen somewhat.

A consideration of these experiments shows that the dose of sugar causes a considerable and sustained rise in the blood sugar. On this evidence they must be considered as being true diabetics. It is clear also that the only reason these children do not pass more sugar is that the leak-point is usually considerably raised.

Raising of the Leak-point a Defensive Mechanism.

In 1915 I expressed the opinion that the raising of the leak-point must be in the nature of a defensive mechanism, and that is an opinion to which I still incline. The gradually increasing sugar tolerance in the case of E. B. may be due not to an increase in the power of the liver and muscles to store up sugar any more quickly from the circulating blood, but to the rise in the leak-point.

Allen[20] has considered this point in connexion with some of his dog experiments. He is strongly of the opinion that the raising of the leak-point is a disadvantage to the animal, as the internal secretion of the pancreas is being overworked whenever the level of the blood sugar is considerably raised. Williams[21] and Humphrey also think that the raising of the leak-point is a sign of evil import. Allen[22] has recently expressed the opinion that in some way the dogs were able to use the "extra" sugar which was in the blood with apparent benefit.

I am in complete agreement with Allen's views on the overtaxing of the internal secretion of the pancreas, but the course of the disease in these two children does not quite tally with his views about the high leak-point. One child has increased her sugar tolerance, and although the other one seems to remain stationary, she does not show any signs of dying. I must confess that I do not understand why the children continue to look so well.

This completes the account of the innocent types of diabetes and of those cases in which the change in the leak-point is an important factor.

Types of Diabetes Mellitus.

It has been the custom to divide the cases of diabetes mellitus into alimentary glycosuria and pancreatic diabetes. A study of the clinical picture shows that although a mild case of alimentary glycosuria differs greatly from a severe case of diabetes, yet cases occur of all degrees of severity, from the mild elderly glycosuria to the severe case whose duration of life after the onset of the disease may be a matter of days. Further, a study of the blood sugar in cases of alimentary glycosuria and severe diabetes does not suggest that there is any essential difference between the two types. In both the machine which regulates the taking up of sugar from the blood is out of action to a greater or less extent, and sugar floods the blood and is excreted in the urine. It seems to me better, therefore, to class all these cases under the head of true diabetes and to subdivide them into mild, medium, and severe types of the disease.

Mild type.—The mild cases usually, but by no means always, occur among elderly people; young people may also have a mild form of the disease.

The mild type is especially common among the natives of India and Ceylon. The patient, as a rule, does not at first complain of any symptom, and the sugar is often discovered accidentally in the course of a routine examination for life assurance, or for some other ailment. The amount of sugar excreted is usually small, 30–50 g., and is only excreted after a carbohydrate meal. The sugar may be present for one or two hours after the meal, and after that the urine may contain no sugar until the patient eats another meal which contains sufficient carbohydrates to overtax the sugar tolerance. The urine passed before breakfast usually contains no sugar. If these facts are considered in the light of our knowledge of blood sugar, it will be realised that the carbohydrates eaten at the meal raise the level of the blood sugar above the leak-point of the individual for a variable period, one, two, or three hours. During this period the sugar will be excreted in the urine until the level of the blood sugar falls below the leak-point. After that the extra sugar circulating in the blood will be gradually taken up and stored.

Many of the cases of mild diabetes occurring in elderly people are, in my opinion due to a temporary depression of the sugar mechanism by another illness. The case of the elderly person who develops gangrene of one limb is typical of this. Gangrene is so frequently accompanied by glycosuria that the surgeon always examines the urine carefully for sugar. So long as the leg remains in a damaged condition it may not be easy to keep the urine sugar-free, but once the leg has been amputated, always assuming that no sepsis or other complication occurs, the sugar usually disappears at once. The patient may recover quite a large sugar tolerance. The association of carbuncle and glycosuria is also well known. On this hypothesis there are a great many elderly people who are potential diabetics. That is, under ordinary circumstances they do not pass sugar on an ordinary diet, although their sugar tolerance is actually reduced. When they are subjected to the additional strain of an illness the sugar tolerance is so much reduced that sugar is excreted.

Medium type.—The medium type of case occurs more often among younger people, and in these cases the sugar is usually discovered because of the symptoms which the patient complains of.

He usually comes to the doctor complaining of weakness, lack of energy, pruritus, and thirst. The thirst in a medium case is not a very prominent complaint and does not, by itself, bring the patient to the doctor. He waits until after the other symptoms have appeared. That is, the medium case is very rarely seen quite early in the disease and the history is usually one of weeks or months.

The amount of sugar passed may be up to and over 100 g. of sugar, and when a patient of this type is investigated sugar is found to be present in every specimen of urine passed. The output of sugar per hour varies greatly, however, as there is an increase in the amount after each meal, and the urine passed before breakfast will contain least sugar. This, in terms of blood-sugar curves, means that the level of the blood sugar is always above the leak-point, although it varies with the amount of carbohydrate eaten at each meal. It was formerly believed that the level of the sugar in the blood was raised because there was a persistent call for the sugar on the part of the tissues which were, however, unable to use it. This hypothesis gains little support from the examination of blood-sugar curves. The effect of each dose of sugar in these cases is to raise the level of the blood sugar from an already high level to a yet higher level. On the present hypothesis the sugar cannot be stored by the liver and muscles and other depôts as well as before; consequently, the sugar circulates in the blood until the excess of it is excreted.

As I pointed out in the last lecture, the total sugar in the blood of a man of 10 st. 3 lb., or 65 kilos, is only 5 g. if the concentration of the sugar in the blood is 0·10 g. per cent. It only needs an extra 5 g. in the blood to raise the percentage of the blood sugar to 0·20 g. per cent., and of 10 g. to raise it to 0·30 g. per cent. These amounts are therefore very small in comparison with the amount usually eaten at a meal, and with the amount excreted by some diabetics. If these patients fast the level of the blood sugar usually drops below the leak-point at once, and may reach a normal figure. When they are tested with a small dose of sugar (10, 20, or 30 g.) there will be a rise and fall in the blood sugar from 0·12 to 0·20 and down again, provided that the patients can tolerate that dose of sugar. If the sugar tolerance is less than 10–20 g. the level of the blood sugar will rise above the leak-point and some sugar will be excreted. The patient therefore behaves just like a healthy person, but his tolerance is reduced from, say, 100 g. of sugar, to 10 or 20 g. The medium case will, of course, pass acetone bodies—aceto-acetic acid which is the dangerous substance, β-oxybutyric acid, and acetone.

Severe type.—The severe cases usually have an acute onset, though it must be remembered that any mild or medium case may become severe in course of time. Further, a mild or medium case may be converted suddenly into a severe one by any intervening disease such as influenza or septic infections.

The newly developed severe cases usually come to a doctor complaining of thirst, and if the case is very severe the actual day of onset can often be discovered. We have recently had three cases in which this could be done. One patient gave a six weeks' history of thirst and could fix the day of onset, having been very thirsty one evening in church and having had to get up twice that night to get water to drink. One boy of 17 gave a history of thirst of 17–20 days' duration. He was able to give the day approximately, as he was not thirsty on a Sunday, but was very thirsty on Thursday, the early closing day of the week. One boy, aged 10, gave a ten days' history, as he was not thirsty on the Sunday but was very thirsty on the Monday. This boy was the only one who complained of anything else at the onset. He was unwell with an indefinite malaise, and was kept in bed for three days after the onset. After that he went back to school, but was very easily tired. This boy died on the fourteenth day after the onset of the thirst.

Very acute cases of this type are rare, but may be commoner than is supposed.

Sir Archibald Garrod was once called out to see a young woman who had become unconscious that morning and had not complained of any illness before this day. The urine was examined, and a great deal of sugar and aceto-acetic acid was found. Dr. T. H. G. Shore tells me that he has made post-mortem examinations on two soldiers who had died in France of diabetes mellitus. One had died in the train on the way down from a C.C.S. to the base, and the other died at a base hospital. In neither case had the disease been recognised during life, but the bodies smelt so strongly of "acetone" that Dr. Shore examined the urine in the bladder, which was found to contain sugar and aceto-acetic acid in large amounts. No other cause of death was found. Even if allowance is made for the extreme degree of overwork which occurred at times in France it is difficult to avoid the conclusion that these two undiagnosed cases belong to the very severe and rapidly fatal type of the disease.

The symptoms which bring these patients to the doctor are usually thirst coupled with weakness or a feeling of tiredness. There is usually no malaise.

The sugar excreted in severe cases is large in amount—200 to 300 g. in the 24 hours—and is always present in the urine. In fact, the amount of sugar passed during the night hours may be as large or larger than that passed during the day when the meals are eaten. The amount of sugar in the blood is usually very high in these cases, and may be as much as 0·40 or even 0·60 g. per cent. The level of the blood sugar remains above the leak-point the whole of the day. If a dose of sugar be given to these cases in the form of a meal the level of the blood sugar rises rapidly after the meal and then falls again.

This is not quite the whole story, as the blood sugar at 6 A.M. was higher in one case than it was at 6 P.M., although nothing had been eaten for some hours. If these patients are starved the blood sugar usually decreases in amount, but it may take several days before it falls below the level of the leak-point, and longer still before it falls to the normal level for a healthy adult. The power of a severe diabetic to store sugar is exceedingly small, and a dose of 10 g. of sugar may be sufficient to cause the excretion of several grammes of sugar. (Fig. 9.)

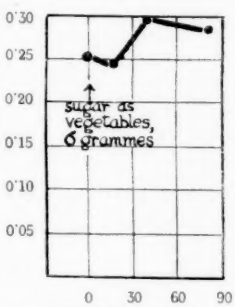

FIG. 9.—Effect of 6 g. sugar in vegetables on level of blood sugar.

Conclusion.

This completes my survey of the different types of diabetes mellitus. Many conditions may cause the presence of sugar in the urine, and the study of these is both fascinating and useful. If we are able to differentiate the cases into groups, and therefore to give a better considered prognosis, then we have at least achieved something. I am tempted to say that anything is better than the teaching of my student days—"death within two years whatever you do." It was not true then, and still less is it true now.

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THE PREVENTION OF URINARY OBSTRUCTION AFTER PROSTATECTOMY.[1]

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THIS article deals with fibrous contraction of the vesical outlet after suprapubic prostatectomy, and with an open operation for its prevention. No paper upon this subject should open without a reference to the fundamental work of our President, Sir Peter Freyer. I can look back to the time when castration, following the erroneous teaching of White, was in vogue as a cure for enlarged prostate, and when Harrison was attempting to prove by statistics that resecting the vas was an efficient substitute and would cure the condition.

I can thus appreciate more fully than many of you here the immense change that was brought about by the introduction of suprapubic prostatectomy by Sir Peter Freyer. It is therefore in no carping spirit of criticism of the operation of suprapubic prostatectomy that I bring forward those cases of post-operative obstruction, but with a view to discussing with you whether some modification of the original operation is not necessary in order to meet this sequel shown by experience to occur.

I shall first relate 16 cases of post-prostatectomy obstruction and then discuss them.

CASE 1.—R. T. H., aged 55 (Ref. No. 24). Examined Jan. 23rd, 1917. Prostatectomy Sept. 28th, 1916 (general surgeon). Prostate adherent and operation difficult. Fistula persisted. On Nov. 18th surgeon introduced forefinger into the bladder and pushed metal bougie through the closed internal meatus. Jan. 13th, 1917: Fistula still leaking, instruments passed under anæsthetic. On the 23rd urinary fistula through which all urine discharged; bougies arrested at internal meatus. Feb. 14th: Operation. Internal meatus admitted a small metal bougie and was surrounded by hard scar tissue. This was excised and a free opening into the prostatic cavity obtained. Wound healed satisfactorily and urine passed in good stream.

A year later the surgeon who had performed the original operation wrote to me about him as follows: "I saw a few days ago an old patient on whom I operated for enlarged prostate. I was pleased and surprised to see him so well, as when I last saw him there was great trouble from cicatricial contraction of the commencement of the urethra and I feared carcinoma. I congratulate you on a remarkable result."

CASE 2.—H., aged 71 (Ref. No. 29). Examined March 21st, 1918. Prostatectomy Jan. 14th, 1918 (general surgeon). Prostate large and shelled out in one piece. Difficulty in separation on left side and posteriorly. Emphysema, bronchitis, dilated heart, and glycosuria. Three weeks after operation attempts to pass catheter failed. Feb. 17th: Instruments passed with finger in bladder and catheter tied in for 14 days. March 21st: Urine discharged entirely by suprapubic fistula, metal instrument arrested at entrance into the bladder. Bladder opened freely, internal meatus completely closed by thick membrane. Membrane excised and large opening into prostatic cavity obtained. A month later suprapubic wound healed and urine passed naturally.

Three months after operation patient died of cardiac failure, having continued to void urine naturally.

CASE 3.—P. W., aged 64 (Ref. No. 35). Examined April 15th, 1918. Prostatectomy Nov. 3rd, 1917 (urinary surgeon). Difficulty in enucleation at lower part of prostate. After operation increasing difficulty in passing catheters. Fistula persisted and urine passed partly by urethra. February, 1918: Surgeon opened bladder and tied catheter in urethra. Wound healed but repeatedly broke down again. There was difficult micturition and attacks of retention. A catheter was obstructed at the internal meatus. At night urine passed only by catheter. April 29th, 1918: Bladder opened freely; vesico-prostatic opening was a small aperture surrounded by a thick cuff of fibrous tissue which gripped a fine catheter tightly. Fibrous tissue removed and prostatic cavity exposed. July: Wound closed, micturition normal.

CASE 4.—A. W. W., aged 66 (Ref. No. 35). Examined Nov. 4th, 1918. Prostatectomy November, 1917 (general surgeon). Since operation frequent micturition day and night and intense desire and spasm. Catheter passed occasionally with difficulty 8 inches from meatus. On rectal examination a hollow in region of prostate with some thickening on either side. On cystoscopy outline of internal meatus very irregular, a diverticulum at bladder base. Nov. 20th, 1918: Bladder opened, a pea-sized nodule of gland tissue at posterior lip of internal meatus. Internal meatus surrounded by fibrous ring; diverticulum with capacity of bean. Nodule removed and large opening into prostatic cavity obtained by cutting away fibrous ring; diverticulum excised. October, 1919: He reported "result of operation splendid and water passed very easily."

CASE 5.—W. M., aged 60 (Ref. No. 38). Examined Feb. 13th, 1919. Prostate removed September, 1918 (general surgeon). Prostate large and operation straightforward. Fistula persisted and healed up for short periods. Difficult micturition, sometimes performed only in recumbent position; dribbling at end of act. Metal instruments passed regularly but with difficulty. Rectal examination showed hollow area in prostatic region and no sign of malignant infiltration. February, 1919: The surgeon again operated, but failed to reach the obstruction and could not pass an instrument through the urethra.

May: I exposed the bladder and found internal meatus surrounded by hard fibrous tissue. This was cut away and a free opening obtained; the wound healed satisfactorily, the bladder closed, and patient was able to pass water freely.

CASE 6.—A. H., aged 53 (Ref. No. P. 246). Examined July 8th, 1920. Prostatectomy March, 1920 (urinary surgeon). Wound healed. Two weeks after returning home difficulty of micturition recommenced, and finally no instrument could be introduced into bladder, obstruction being at internal meatus.

Operation July 12th, 1920. Internal meatus surrounded by scar tissue and admitted probe. Scar tissue cut away; irregular areas of fibrous tissue in wall of prostatic cavity, and in dissecting a fibrous mass a portion of the rectal wall was excised. Edges of rectal wound brought together with catgut stitches, catheter tied in urethra and prostatic cavity packed with iodoform gauze. Continuous irrigation of bladder and prostatic cavity, and frequent rectal washing. Wounds healed, and patient left hospital passing clear acid urine freely.

CASE 7.—A. F. H., aged 63 (Ref. No. 46). Examined Oct. 11th, 1920. May, 1918, prostatectomy (general surgeon with special experience). Moderately enlarged firm prostate. After operation great difficulty in passing instruments. Urethra dilated with metal instruments. Fistula persisted in spite of retained catheter. For 18 months urine passed only in a dribble, and has been on catheter life. Fistula closes for some weeks and then reopens. Micturition ceases after passing an ounce of urine and then catheter withdraws about a pint. In rectum a hollow prostatic area without induration. Small catheter passed but was gripped at internal meatus.

Operation Oct. 21st, 1920. Masses of fibrous tissue removed and bladder mobilised. Neck of bladder and internal meatus drawn under arch of pubes and fixed with fibrous tissue. Mucous membrane at internal meatus fell together laterally so as to close it. With finger no opening felt. On introducing catheter the internal meatus was found to be an antero-posterior slit, surrounded by hard, fibrous tissue, which gripped the point of the catheter. Fibrous ring was dissected away and free entrance to prostatic cavity obtained. Small fistula persisted for some weeks, but eventually healed. There was a full and powerful stream and no residual urine.

CASE 8.—E., aged 63 (Ref. No. 48). Examined Oct. 27th, 1920. October, 1918, prostatectomy (urinary surgeon). Enlarged prostate and some calculi removed. During convalescence difficulty in passing urine and instruments were passed. After leaving the home obstruction increased, and in March, 1919, catheter passed with difficulty. April, 1919: Complete retention. Instruments failed. A general surgeon opened bladder and introduced catheter. After that much better, but had to use catheter frequently. Difficulty of micturition increased, and in June, 1920, instruments were passed twice. Dilatation was followed by increased difficulty and retention, requiring catheter. During September and October, 1920, there were repeated attacks of retention of urine, relieved by dilatation by bougies and passage of catheter. I examined him on Oct. 27th, 1920. He was confined to bed and in a nervous, depressed condition, with tremors of hands and legs. Bladder not distended; in rectum there was a hollow prostatic area; no dilatation of seminal vesicles and no induration. Metal catheter (No. 8) passed an obstruction at the membranous urethra and another at entrance into bladder, where it was tightly gripped.

I operated on Nov. 4th, 1920. Large hernia of suprapubic scar. Lower part of bladder and internal meatus were dragged down under the pubic arch by fibrous tissue and were very difficult to reach. Internal meatus was a rigid ring admitting tip of little finger. A quarter of an inch below this the catheter lay in hard ring of fibrous tissue. Fibrous tissue at internal meatus and in prostatic cavity was dissected away. Anterior wall of prostatic cavity also dissected away from pubic symphysis.

Patient returned home five weeks after operation. Urine was then passed freely with good stream but with some lack of force. Catheter passed easily into bladder; no residual urine. At times there is an escape of a few drops of urine on rising suddenly or on sitting up in bed, but this symptom now (March, 1921) occurs at long intervals.

CASE 9.—W. S., aged 55 (Ref. No. P. 387). Examined Nov. 4th, 1920. Prostatectomy June, 1920 (general practitioner). After operation never passed urine by urethra except with catheter; urinary fistula persisted, instruments being arrested at internal meatus. Prostatic area soft, no induration.

Operation Nov. 8th, 1920. Scar excised, bladder base exposed; internal meatus found to be completely closed; tongue of tissue about size and shape of bean and free at one end projected upwards from the bladder base in position of internal meatus. This mass was cut away and mucous membrane and fibrous tissue forming roof to prostatic cavity removed, and free opening made. The patient made uninterrupted recovery, and left hospital healed and passing urine freely in powerful stream.

CASE 10.—A. D., aged 60. Examined Jan. 13th, 1921. Prostatectomy Sept. 11th, 1920 (general surgeon). Prostate removed with difficulty in two pieces. Very adherent posteriorly. Catheters passed during convalescence. Healed in nine weeks, but broke down again and has since healed and broken down several times. Metal instruments were passed. Urine passed with difficulty; micturition easier lying on back. Residual urine varied from six to nine ounces.

Operation Jan. 19th, 1921. Thick masses of scar tissue dissected from suprapubic area and bladder freely opened. Internal meatus admitted tip of little finger, and was filled with soft granulation tissue. About a quarter of an inch below internal meatus prostatic cavity narrowed by fibrous tissue which reduced lumen to No. 6 English bougie. Fibrous tissue was dissected away and found to extend down to triangular ligament where opening was small and rigid. Catheter was tied in; recovery was complete, with free and powerful stream.

[1] A paper read before the Section of Urology of the Royal Society of Medicine on Jan. 27th, 1921.

CASE 11.—R. S., aged 60 (Ref. No. 18). Examined June 15th, 1914. Prostatectomy March 4th, 1914 (general surgeon). Operation difficult; prostate hard and fibrous; no irrigation of bladder during convalescence. First time catheter was passed a gush of pus came away, but no urine. Many unsuccessful attempts were made to pass instruments into the bladder. Suprapubic fistula persisted, and all urine discharged through this. On examination skin of lower abdomen eczematous; suprapubic scar thick and indurated. All urine was discharged through fistula. Obstruction to instruments after passing membranous urethra, and between this and the bladder there was an area of hard fibrous tissue. Metal instruments passed up to 16/18 English and a catheter tied in urethra. In 14 days suprapubic wound healed and eczema disappeared. Urine passed freely by urethra. Patient died suddenly four months after I saw him after obscure abdominal symptoms. Intestinal obstruction was found, due to a band extending from upper part of right side of bladder down into pelvis.

CASE 12.—C. H., aged 61 (Ref. No. 16). Examined April 6th, 1914. Prostatectomy (general practitioner), January, 1914. Suprapubic tube retained for 14 days after operation. Fistula persisted, only a few drops of urine being discharged from urethra and a stream from fistula. Obstruction at vesico-prostatic junction, which admitted small instrument. On rectal examination a hollow area was found in place of prostate and no induration. Catheter tied in and suprapubic wound healed, but there was constantly recurring difficulty of micturition and instruments were passed at intervals. He lived in the country, and finally was able to pass instruments himself and keep the scar dilated.

CASE 13.—S. W., aged 58 (Ref. No. 14). Examined March 17th, 1914. Prostatectomy Oct. 23rd, 1913 (urinary surgeon); simple adenoma. Great difficulty in passing catheter three weeks after operation. Patient left the home Nov. 30th healed and passing fairly good stream, which got gradually worse and at end of December was reduced to a mere dribble. Surgeon again attempted to pass catheter and failed. Patient was told that there was block at neck of bladder. When I examined him urine was passed in feeble dribbling stream. In the rectum there was a hollow area in place of prostate, but no induration. In passing instrument there was difficulty at membranous urethra and also at internal meatus and I failed to enter bladder. Operation for removal of obstruction recommended, but I did not see patient again.

CASE 14.—W. P., aged 75 (Ref. No. 34). Examined Dec. 12th, 1918. Prostate removed (urinary surgeon). Prostate large and shelled out easily. Wound closed, but in a few months he had increasing difficulty in micturition and required catheter. In March, 1916, bladder was opened and internal meatus dilated; the wound healed quickly. When I examined him he complained of frequent micturition, and passed a small dribbling stream after great difficulty. I failed to pass an instrument into the bladder, the obstruction being at the internal meatus. Fibrous thickening in prostatic area was felt from rectum.

On Dec. 18th, under spinal anæsthesia, instruments passed and a catheter tied in urethra. The obstruction slowly recurred, and on March 20th, 1919, I again passed instruments.

CASE 15.—W. G., aged 77 (Ref. No. 33). Examined Oct. 5th, 1918. Prostatectomy five years before (general practitioner). Prostate weighed 11¼ ounces. For some months before I saw him he had increasing difficulties of micturition and frequency of straining. Prostatic area flat and no sign of malignant infiltration. I failed to pass instruments, the obstruction being at the internal meatus. Under an anæsthetic the fibrous ring was dilated and a catheter tied in. Micturition was free for a time, but on Nov. 29th, 1918, the obstruction at the internal meatus had again developed. Urethra dilated and a catheter tied in. I have lost sight of this patient.

CASE 16.—R. S. R., aged 58 (Ref. No. 49). Examined Dec. 1st, 1920. Prostatectomy May, 1919 (urinary surgeon). Previous to operation was on catheter life. Operation said to be difficult, but no information in regard to prostate; wound healed in four weeks. Had bilateral epididymitis. Since operation patient can pass one ounce of urine voluntarily and then requires catheter. He had undergone a course of electric treatment for the bladder since the operation. On examination the bladder was distended. The prostatic area was hollow and without induration. A small catheter passed with difficulty, being gripped in prostatic area. Two pints of stinking alkaline urine were withdrawn. No sign of disease of the nervous system and no history of syphilis. I did not consider that there was nerve atony of the bladder, but regarded the condition as one of obstruction at the internal meatus. Cystoscopy recommended, but patient refused.

DISCUSSION OF CASES.

These 16 cases are patients suffering from obstruction after suprapubic prostatectomy, the obstruction being due to the formation of fibrous tissue in the area from which the prostate was removed. The cases have been carefully selected so as to exclude two types of case in which there is post-prostatectomy obstruction, but which for the sake of clearness I am anxious to exclude from discussion at present. These types are:—

(1) Obstruction due to prostatic lobes left behind at the operation. I have seen a few cases where a large part of the prostate, amounting to a whole lobe, or even what would appear to be both lobes, was discovered in examining for the cause of the obstruction after a so-called prostatectomy. Freyer has published such cases.

(2) Obstruction due to malignant growth following the removal of a prostate. This includes cases frankly malignant at the time of the operation, cases where there was a suspicion of malignancy, and the difficulty in enucleation and eventually the microscope proved that malignant change had occurred in a simple enlargement of the prostate, and finally, cases where clinically there was a simple enlargement, but the pathologist reported that some part of the adenomatous prostate showed malignant changes.

All these types I have excluded from this article as they raise issues outside those I wish here to discuss. Further, I wish to make it clear that there are here no cases of atony of the bladder from disease of the spinal cord, or atony of the bladder of the type I have described as atony without obstruction or signs of nervous disease. The tone of the bladder in these cases was normal and capable of projecting a good stream of urine when the obstruction was removed.

Post-Operative History.

The post-operative history of these cases is of interest. In some the obstruction appeared early in the convalescence from the operation. There was a delay in passing urine, and instruments were passed usually about three weeks after the operation in order to dilate the urethra and assist the passage of urine. In other cases there was difficulty in passing a catheter from an early date after the operation, and a catheter was tied in. In spite of these precautions obstruction commenced either at once or soon after leaving the home. In one case the obstruction became evident some months after the operation and in another only four years after the operation. In two cases no urine was passed at any time after the operation, and all attempts to pass instruments into the bladder failed. These two patients were told that the condition was incurable, and the suprapubic fistula must remain open. A suprapubic fistula persisted in 8 of the 16 patients and in 4 of these all the urine was passed through the fistula, no urine passing by the urethra. In the remaining 4 cases some urine passed by the urethra and some by the fistula. In two of these (Cases 5 and 7), the fistula healed up from time to time and then broke down again.

In cases where the wound healed completely or the fistula only broke down occasionally the symptoms were those of severe obstruction, usually constant, but occasionally varying from difficult micturition and straining to periods of retention. In such cases the patient was on catheter life, the catheter being passed with great difficulty. In three cases after some months instruments were passed under an anæsthetic and the stricture dilated, this proceeding being repeated on several occasions. In four cases a second operation had been undertaken, the bladder being opened, instruments being passed, and a catheter tied in the urethra. In all of them the obstruction had recurred.

Anatomy of the Prostatic Bed after Prostatectomy.

In order to understand the condition present in these cases it is necessary to have a clear idea of the anatomy of the parts after prostatectomy. The enlarging prostate expands in two directions: (1) backwards towards the rectum, expanding the fascial sheath and stripping it from the bladder base; and (2) upwards into the bladder, stretching the sphincter and pushing up through it into the bladder cavity.

After enucleation of the prostate a cavity of varying size is left. Lying on the postero-inferior wall of this is a small strip of the mucous membrane of the urethra, representing the portion of the posterior wall of the prostatic urethra which lies between the verumontanum and the membranous urethra. (Fig. I., *1* and *2*.) The seminal vesicles lie in the posterior wall, having been stripped from the bladder base by the enlarging prostate. This cavity is roofed by a shelf or canopy formed by the bladder base, and communicates with the bladder cavity by the opening through which the prostate was enucleated. This opening varies very greatly in size.

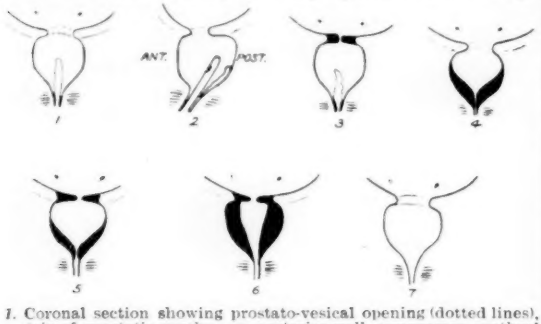
In prostates where the intravesical projection of the prostate has been very large, the opening may be so wide that there is scarcely any ledge at all. In the majority of prostates, however, this ledge is very pronounced, and the opening into the vesical cavity lies at the anterior part of the roof of the prostatic bed. This is most evident in the type of prostate where the enlargement has been extravesical and can be felt prominently in the rectum, but does not project through the sphincter into the bladder, and in those prostates where there is a small intravesical nodule and a large extravesical adenomatous mass. At this prostato-vesical opening the mucous membrane of the urethra, when it joins that of the bladder, is torn across.

The urethra communicates with the prostatic cavity at the lower end and anterior part, this part of the urethra being directed obliquely upwards and backwards. The mucous membrane of the urethra is usually torn across very obliquely at the prostato-urethral junction. The anterior wall is torn at or near the point where the membranous urethra joins the prostatic cavity, a strip of the posterior wall of the prostatic urethra extending as high as the verumontanum is usually left behind, adhering to the posterior wall of the prostatic bed. On examining specimens of the enucleated prostate, when the gland has been removed in a mass, the absence of this strip of the posterior wall of the prostatic urethra will be noted. In some cases a large part of the prostatic urethra remains as a long ragged tube attached to the membranous urethra, in other cases a long tube of the mucous membrane of the membranous urethra is removed with the prostate. These conditions are, however, exceptional, and the common condition is as I have noted.

Anatomy of Post-Operative Contraction.

It is many years since I showed[2] that there were two danger points for the development of stricture after prostatectomy—namely, at the membranous urethra when the mucous membrane is severed, and at the outlet of the bladder when the mucosa of the bladder neck is torn across. It is rare to find any contraction at the membranous urethra, partly because it is the custom to pass the catheter in order to wash the bladder during convalescence; if there is any obstruction here it will at once be noticed, and catheters of different calibres passed through it. But the principal

FIG. I.—*Prostatic Cavity after Suprapubic Prostatectomy.*



1. Coronal section showing prostato-vesical opening (dotted lines), strip of prostatic urethra on posterior wall, compressor urethral muscle.
2. Sagittal section with catheter showing posterior ledge.
3. Fibrous contraction at prostato-vesical opening.
4. Fibrous contraction at prostato-urethral outlet.
5. Fibrous contraction at both outlets.
6. Fibrous tissue in wall of cavity.
7. Prostatic cavity after removal of fibrous masses.

reason for the absence of contraction at this point is, I believe, to be found in the strip of mucous membrane which almost always remains attached to the posterior wall of the prostatic bed. This strip prevents the formation of a circular ring of fibrous tissue, which might develop if the mucous membrane were torn across transversely.

In some cases where a sleeve of mucous membrane of the membranous urethra is removed with the prostate there is certainly a tendency to contraction of the scar in the region of the triangular ligament. In these 16 cases there are only 2 where the obstruction was very pronounced at the urethral end of the prostatic cavity. It is at the inlet of the prostatic cavity into the bladder that the contraction may take place, and obstruction at this part was present in 14 out of the 16 cases here recorded. (Fig. I., *3.*)

In 10 of the 16 cases I operated, opening the bladder freely and inspecting the prostato-vesical opening. In 4 of the cases the obstruction was physiologically complete, all the urine passing through a suprapubic fistula. In the remaining 12 the obstruction was incomplete. There were two cases where the internal meatus was completely closed, no trace of an opening being discovered either by palpation or by inspection. In one of these (Case 2) the base of the bladder was smooth and there was no indication as to where the opening into the prostatic cavity had been. In the other case (Case 9) the opening was obliterated, but just behind its probable position, judged by pushing up the roof of the prostatic cavity from below with a metal sound, a tongue-shaped nodule of prostatic tissue, the size of the terminal joint of the thumb, projected upwards and forwards. This tongue of prostatic tissue was attached by a comparatively narrow base, and had evidently been a nodule which was partly detached at the time of the operation, but had retained a sufficient blood-supply to survive. Had an opening into the prostatic cavity been present it would have acted as a valve. In the two remaining cases, where the obstruction to the passage of urine was complete and the introduction of a catheter was impossible, the internal meatus was so small that only a fine probe could be passed through it from the bladder into the prostatic cavity (Cases 1 and 6).

In two cases a fine catheter could be passed with great difficulty. In one the catheter was found at operation to be firmly gripped by a ring of fibrous tissue (Case 3). In the second (Case 8) the internal meatus was fibrous but open, and admitted the tip of the forefinger. Below this, near the apex of the prostatic cavity, there was a dense mass of fibrous tissue which caused the obstruction. This on dissection was proved to extend to the membranous urethra. (Fig. I., *4.*)

In three cases a No. 8 catheter could be passed after some difficulty, and at operation there was a fibrous ring which held the catheter in a firm grip (Cases 4, 5, and 7). In one of these, in addition to the fibrous ring, there was a small nodule of prostatic tissue on the posterior lip of the opening, and also a diverticulum of moderate size (Case 4). In another, on removing the catheter the fibrous sides of the ring came together and formed a narrow antero-posterior slit.

In all the cases complete restoration of the bladder function with free flow of urine followed the operation and the fistula healed.

Possible Causes for Failure of the Operation.

Before passing on to consider the treatment of these cases and the method of prevention, two points will be considered.

(1) Is the post-operative obstruction in these cases due to inexperience or lack of skill on the part of the operator?

In the cases here recorded we find that three were operated on by general practitioners, six by general surgeons, one by a general surgeon with special urinary experience, and six by urinary surgeons. I do not wish to give the impression that although the cases are practically divided between the general surgeons and the urinary surgeons, these two types of operator are specially responsible for the result, for it must be obvious to anyone that the general surgeon operates on a much greater number of cases of enlarged prostate than the general practitioner, and it is a fact that the urinary surgeon operates on more cases of enlarged prostate than the general surgeon. The true proportion could only be reached by taking the percentage of the results of all cases operated on by each class, a figure impossible to state. What I think these figures show is, however, that post-operative obstruction of this nature may, and does, occur in the hands of the most experienced class of operators on the prostate. I draw the inference from this that, although lack of skill might have been shown in one or two cases, the operation may be skilfully carried out and still, in a certain number of cases, be followed by obstruction of this special kind.

(2) The second point to which attention will, I think, be directed is the question as to whether the type of prostatic enlargement may have some influence on the result.

I have already made clear that all cases of malignant growth have been excluded from these records. There remain two types of prostatic enlargement, the extreme examples of which differ materially from each other, the small fibrous or fibro-adenomatous type and the large prostatic adenoma. Broadly speaking, the small fibrous or fibro-adenomatous type is enucleated with difficulty and leaves a small cavity, while the large adenoma shells easily and leaves a large cavity. There has been some difficulty in discovering what type of prostate was removed in these 16 cases and in 5 cases I have no information. In the remaining 11 cases 5 were known to be small and fibrous and 6 were adenomatous, 5 being designated "large adenoma" and one "simple adenoma." I do not consider these figures are conclusive, one-third of the cases being excluded.

I have the impression, gained from some years' experience of open inspection of the prostatic cavity and internal meatus during prostatectomy, that the condition likely to produce post-operative obstruction by contraction of fibrous tissue is more frequently present in operation on the fibrous or fibro-adenomatous prostate than on the large adenomatous

[2] Brit. Med. Jour., 1905, ii., 1250.

—that is to say, where the size of the prostato-vesical aperture is small. In the adenomatous prostate there are frequently found long loose strips of capsule or of the anterior commissure, semi-detached nodules or prostatic tissue, or loose strips of torn urethra.

I have fully discussed and illustrated these strips, flaps, and nodules elsewhere,[3] and shall refer to them again in discussing the operation. But the fact that in six of these cases the prostate was stated to be adenomatous (five being large adenomas) shows quite clearly that fibrous contraction of the bladder outlet may occur after operation on this type of prostatic enlargement, as well as after that on the fibrous prostate.

Treatment of Post-operative Obstruction.

I will first discuss the treatment of obstruction when it has actually occurred and then turn to my proposal for prevention. It is, I believe, the routine custom with most surgeons in this country to pass a catheter daily after the operation and wash the bladder, commencing with the catheter about a week after the operation and continuing until the suprapubic wound is healed. The first evidence of obstruction is difficulty in passing the catheter, and there is delay in the healing of the wound. The wound may, however, heal up either in average time or after some delay. A fistula persisted in 8 out of the 15 cases here recorded.

The difficulty of passing a catheter into the bladder after many cases of prostatectomy is, I think, pretty generally recognised; it is due to the catheter hitching under the ledge over the posterior part of the prostatic cavity found by the bladder base, and is surmounted by using a fully curved catheter and keeping well forward, when the instrument slips easily into the bladder. The obstruction to the passage of instruments, where there is narrowing at the internal meatus, is of similar character, but either the instrument entirely fails to enter the bladder after the whole of the roof of the prostatic cavity has been searched, or it enters the bladder and is felt to be gripped in a stricture.

In most cases of this series this has been the signal for an attempt to dilate up the internal meatus by the passage of instruments, and if the attempt was successful a catheter was tied in for a time. This treatment was adopted during the early part of convalescence after operation in several of the cases here recorded. Where it failed the forefinger was passed along the still open wound and metal instruments guided through the internal meatus or forced through the almost closed aperture. This was carried out in two of these cases. In some instances this treatment was not successful, and the obstruction either progressively increased or recurred after a time. Now either a catheter was passed constantly with difficulty, or regular or recurrent dilatation was carried out, or instruments failed altogether. When the obstruction had reached this stage either the patient was abandoned to a life of misery with a suprapubic fistula or a second operation had been performed. In four cases secondary operations had been performed at intervals of from four to ten months after the operation. These secondary operations consisted of opening the bladder, forcing a metal instrument through into the bladder from the prostatic cavity, and tying in a catheter for a varying time. In all these cases the obstruction recurred after a comparatively short interval.

I saw these patients at a time varying for two months to five years after the prostate had been removed. Four of them I treated by dilatation with metal instruments under an anæsthetic, and this was repeated several times in some cases. The contraction was temporarily relieved, but in none was a permanent cure effected. One patient learned to pass a bougie himself and used the instrument regularly; the others after one or several dilatations passed out of my care.

Dilatation in these cases is, I consider, an unsatisfactory method and gives only temporary relief. The condition is a traumatic stricture, and resembles a traumatic stricture in the bulbous urethra in the difficulty in treatment by dilatation. Moreover, the passage of instruments is usually attended with much difficulty, owing to the presence of the prostatic cavity in front of the stricture. In ten cases I operated and removed the scar tissue through a suprapubic wound.

The following points are essential in carrying out the operations:—

(1) All scar tissue in the abdominal wall is removed and the bladder separated from the abdominal wall.

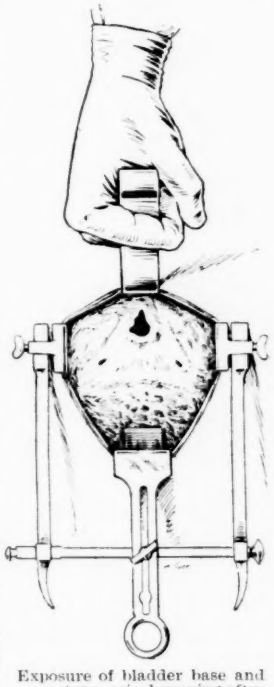
(2) The bladder is dissected from the posterior aspect of the pubic symphysis, and mobilised.

(3) With the patient in the Trendelenburg position the base of the bladder is freely exposed by means of retractors.

(4) In the cases where a catheter can be passed through the internal meatus, it is necessary to withdraw this before attempting to excise the fibrous ring. The ring is grasped with long forceps and cut backwards with long curved scissors. The scar tissue on each side is then dissected away so that a free opening is obtained. (Fig. I., 7.) Where the internal meatus is completely closed a metal instrument should be passed along the urethra and the roof of the prostatic cavity pushed up on the point of the instrument and incised. The whole of this canopy is then dissected away. Dissection may have to be carried into the prostatic cavity, for in some cases thick ridges of fibrous tissue may be found on the wall. (Fig. I., 5 and 6.) Great care must be exercised here. The rectum lies immediately beneath and is adherent. In one case, when dissecting away a mass of fibrous tissue, I excised a strip of the rectal wall. Stitches were introduced and irrigation of the prostatic cavity and rectum carefully carried out and the wound healed, the patient leaving hospital with a clean sterile urine. This case shows the danger of too free dissection inside the prostatic cavity.

Where the obstruction lies in the neighbourhood of the membranous urethra the dissection is extremely difficult owing to the fact that the scar tissue round this part drags the urethra under the arch of the pubes, and even with a perfect exposure of the bladder base and prostatic cavity it is difficult to reach this area. I have not found it necessary after the free opening up of the prostatic cavity to tie in a catheter unless it is desired to treat concurrent sepsis by constant irrigation.

FIG. II.



Exposure of bladder base and prostato-vesical opening after enucleation of the prostate.

An Open Operation for the Prevention of Post-prostatectomy Obstruction.

The operation consists in first enucleating the prostate and then in freely exposing the bladder base and prostato-vesical opening by means of the Trendelenburg position and special retractors. Any fold or flap that might cause obstruction is then removed. The details of the operation are as follows:—

A catheter is passed and the bladder distended with 12 or 14 ounces of fluid. A free suprapubic incision is made, the bladder is opened, and the prostate is enucleated with the gloved right forefinger. I can in most cases dispense with the finger in the rectum, but in small tough or in very large prostates the gloved forefinger is used to push up the prostate from the rectum. The prostate being free in the bladder, the left forefinger is removed from the rectum; the glove is stripped from the left hand by a nurse and replaced by a fresh glove. The prostate is then removed from the bladder by means of forceps, aided with the left forefinger.

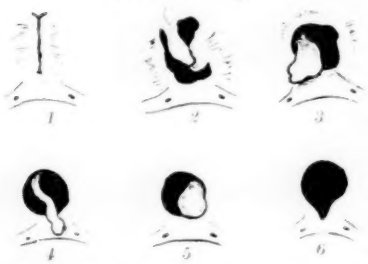
So far, except for the matter of gloves and the avoidance in many cases of the introduction of a finger into the rectum, the operation is that practised by Freyer. Now we depart from his technique. Instead of irrigating the bladder with hot solution, a catgut stitch is passed through each lip of the bladder wound and the patient is placed in the full Trendelenburg position. A good headlamp is essential for this part of the operation.

I then introduce my bladder retractors and freely expose the base of the bladder and the prostato-vesical opening. (Fig. II.) A gauze plug is pushed into the prostatic cavity to control bleeding temporarily and the bladder is emptied of clot. When this is done the plug is removed, and a careful inspection of the prostatic cavity and its inlet into the bladder is made. Hæmorrhage first claims attention. In some cases, by the position of the patient and the temporary plugging the hæmorrhage is already reduced to a very small amount of venous oozing. In most cases, however, some amount of bleeding is in progress and in some spouting arteries are seen.

[3] British Journal of Surgery, 1920, No. 28, vol. vii.

The bleeding is of two kinds, arterial and venous. Arterial bleeding comes in many cases from an artery situated at the brim of the vesico-prostatic entrance on one or both sides. There is frequently a spouting vessel on each side in this position, just below the mucous membrane. Long Spencer Wells forceps are placed on these vessels. With my handled bladder needle, a catgut stitch is passed on each side through the edge of the mucous membrane of the bladder and the sphincter and tied anterior to the forceps. Care must be taken not to pass these stitch ligatures too deeply, for the prostatic plexus of veins runs horizontally in the angle just outside this on each side. These two sutures now act as tractors to pull up the neck of the prostatic cavity and keep the edges apart. Arterial bleeding from the wall of the cavity may be seen, and Moynihan's rather heavy artery forceps with curved beak are applied and the tissue in their grasp crushed. Venous bleeding comes mostly from the anterior wall of the cavity in which lies the vertical limb of the prostatic plexus. It is difficult to see the bleeding point here, but in most cases it is not serious and may be controlled by a temporary plug. In cases where the bleeding is unusually severe plugging with iodoform gauze will efficiently control it; this is very accurately carried out with the cavity freely exposed. The point of the catheter is pulled well into the bladder and strips of gauze packed into the prostatic cavity round this, the gauze being removed on the second day.

FIG. III.—*Internal Meatus after Prostatectomy.*



1. Lateral folds of mucous membrane closing internal meatus.
2. Flaps of mucous membrane.
3. Adherent flap of prostatic capsule.
4. Strip of prostatic urethra.
5. Adherent nodule of prostate.
6. Flaps removed and wedge of posterior fold excised.

Having controlled the hæmorrhage, the next point to attend to is the removal of any structure that might produce post-operative obstruction. A large variety of tags, flaps, strips, nodules, or folds are found. It is a revelation when one comes to examine the prostatic cavity after enucleation of the prostate to see the number, size, and variety of these loose masses of tissue.

I have described elsewhere the following:—

1. Strips of mucous membrane at the prostato-vesical opening. (Fig. III., 2.)

2. Nodules of prostatic tissue in the neighbourhood of the opening. These may be present even where the prostate has apparently shelled out cleanly.

3. Loose strips of prostatic capsule and occasionally small nodules of gland tissue attached loosely to the wall of the prostatic cavity. (Fig. III., 3, 5.)

4. Loose strips of urethral wall pulled out and torn across. (Fig. III., 4.)

5. Flaps of mucous membrane. At the prostato-vesical opening there is frequently a large loose flap of mucous membrane on each side, and these flaps may almost meet over the prostatic cavity. (Fig. III., 1.)

6. A prominent semilunar ridge forms the posterior lip of the opening. This ledge is formed by the trigone and adjoins the base of the bladder.

It is to the last two structures that I wish specially to direct your attention at present, for they are the cause of the permanent obstruction. These flaps of mucous membrane may unite so as completely to close the prostato vesical orifice and the crescentic fold is the structure that promotes the narrowing by fibrous contraction after the operation. The flaps of mucous membrane are dissected away; the posterior fold is grasped in long forceps, and a wedge with the base anterior is cut out of it with curved scissors. (Fig. III., 6.) The tissue removed consists of mucous membrane, trigonal muscle, and frequently some gland tissue. This effectually removes any possibility of narrowing at the prostato-vesical opening.

It may be objected that this free enlargement of the prostato-vesical opening destroys the vesical sphincter. In 1904 I pointed out that the action of the internal vesical sphincter was destroyed in cases of suprapubic prostatectomy from enlarged prostate. The sphincter action is taken up by the compressor urethræ, which effectually prevents the escape of urine. The prostatic cavity thus forms a prolonged neck communicating with the bladder cavity.

Having completed the clearing out of the prostatic cavity and the enlarging of the prostato-vesical opening, repair of the bladder and abdominal wall is undertaken. The retractor is removed from the bladder and the bladder blades replaced by the abdominal blades. By inserting it so as to retract the abdominal wall with the frame to the kneeward side of the operation field the anterior wall of the bladder is fully exposed. A large rubber tube is placed in the bladder and the catgut slings are crossed in front of this so that the edges of the cystotomy opening are brought together. Interrupted catgut sutures are placed in this, the slings are removed, and the bladder drops down into the pelvis. A small rubber tube is placed in the prevesical space. Two catgut mattress sutures are placed through the recti and sheath about an inch on each side of the wound, and the margin of the anterior rectus sheath are united with a continuous catgut suture.

A CONTRIBUTION TO THE STUDY OF THE ENDOTHELIOMATA.

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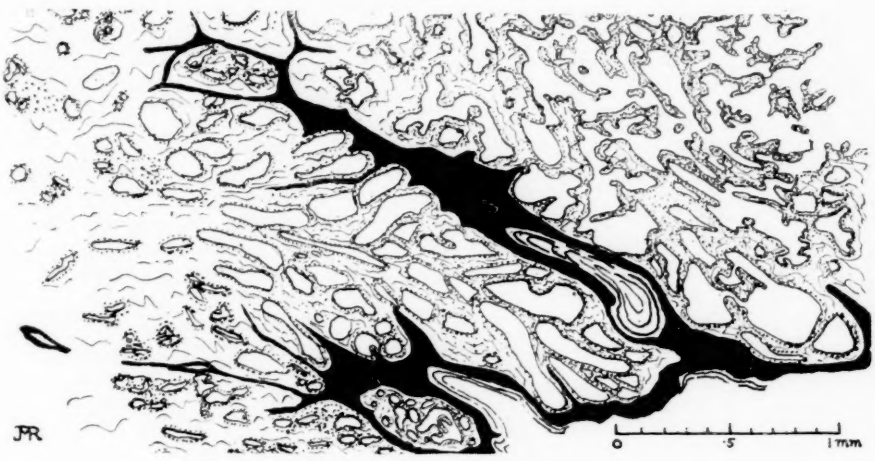
No one will dispute the statement that there is less unanimity among pathologists on the subject of the endotheliomata than there is about any other type of tumour. Every standard text-book of pathology bears witness to this, and in all of them it is acknowledged that the relative incidence of the endotheliomata varies according to the point of view of different pathologists. In some laboratories the diagnosis of an endothelioma is a commonplace of routine work; in others it is rarely and unwillingly indulged in. This state of affairs is obviously unsatisfactory and reflects both upon our skill and upon the scientific standards on which our work is supposed to be based. In point of fact, when the subject is considered critically, it appears that the diagnosis of the endotheliomata rests on a very precarious basis, and there is no doubt that it is a common practice to label a tumour an endothelioma because, as it is said, it is impossible to force it without violence into any of the accepted groups of carcinomata and sarcomata. Inasmuch as this attitude of mind presupposes a finite knowledge of the histological potentialities of the malignant epithelial and connective tissue cell, it cannot be considered scientifically correct; and it is certain that in the past it has led to grave errors. When, for example, the sarcomatous transformation of the stroma of a carcinoma of the mouse was first observed, the opinion was freely expressed that the phenomenon could be explained on the assumption that the primary growth was really an endothelioma, and that the sarcomatous tissue represented another phase of the growth of the endothelial cell. This, of course, we now know to be untrue.

In Adami's classification the endotheliomata are grouped under the transitional lepidomata, and he teaches that in conditions of new growth they may assume either carcinomatous or sarcomatous characters. This is a convenient doctrine, but one which, in our experience, is not borne out in practice. On the other hand, we hold that the power of polymorphic growth possessed by the malignant epithelial cell has been insufficiently recognised. The carcinoma cell does not always conform to type, but may vary so greatly from

the elements of the general run of tumours derived from similar epithelium as to be scarcely recognisable.[1] We would describe many so-called endotheliomata as atypical carcinomata, including the large group occurring in the parotid and other salivary glands.

Another diagnostic feature of these tumours has been the supposed relation of their cells to blood or lymph vessels, and endotheliomata and peritheliomata have been described in the belief that the neoplastic cells grow either into, or away from, the lumen of the vessel from which they arise. It is difficult to see, however, how such a relationship can persist. In the ordinary course of events the normal structure of the tissues must be totally obscured by proliferation of the tumour cells, and in growths of any but microscopic size the site of origin must be indistinguishable. The only possible explanations of such appearances are either permeation within the lumen of a vessel or in the lymphatics surrounding it, or the survival of tumour cells which are more favourably situated than their fellows in respect to the vascular supply of the part.

FIG. 1.



Cutaneous hæmangeioma. Low-power drawing. The tumour is of the capillary type.

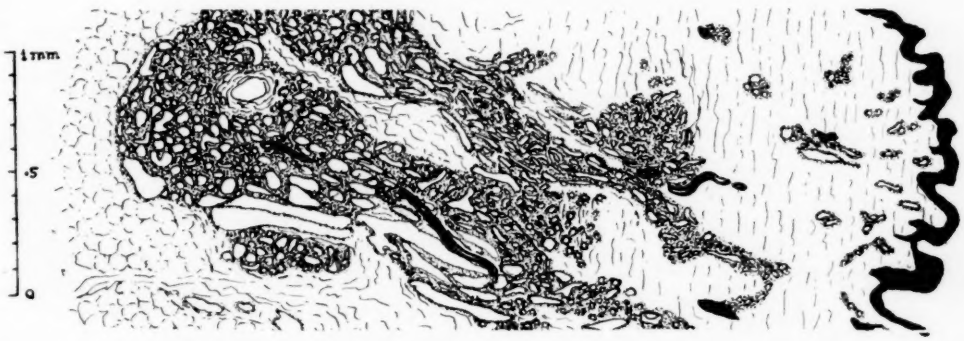
Behaviour of the Neoplastic Endothelial Cell.

These criteria, then, have little to recommend them, and it is plain that if we are to arrive at any more definite conceptions as to what constitutes an endothelioma we must approach the problem in another way. The logical, and indeed the obvious, way is to determine, if possible, how the neoplastic endothelial cell behaves, and what forms it can assume; that is, to establish definite standards and to insist that any tumour shall conform to them before it can be called an endothelioma.

Some three years ago one of us[2] described two interesting vascular tumours which were remarkable in the close resemblance their cells bore to vaso-formative tissue, and the way in which they developed into capillary vessels or arranged themselves as lining membranes. It seemed worth while to determine whether these properties were shared by the cells of vascular tumours as a whole, and to this end we have collected and examined in detail a large number of such growths. And since our object was to endeavour to establish standards for the recognition of the neoplastic endothelial cell, we have worked chiefly with angeiomata so that our material might be free from the criticism that the tumours were not really of endothelial origin.

The majority of our tumours are cutaneous or subcutaneous angeiomata, which are admirable material for an investigation of this kind since they are more or less innocent and closely resemble normal vascular tissue. They form a series running from the simple capillary angeioma to the more solid or compact hæmangeioma simplex. The simplest types consist of collections of dilated capillary vessels filled with

FIG. 2.

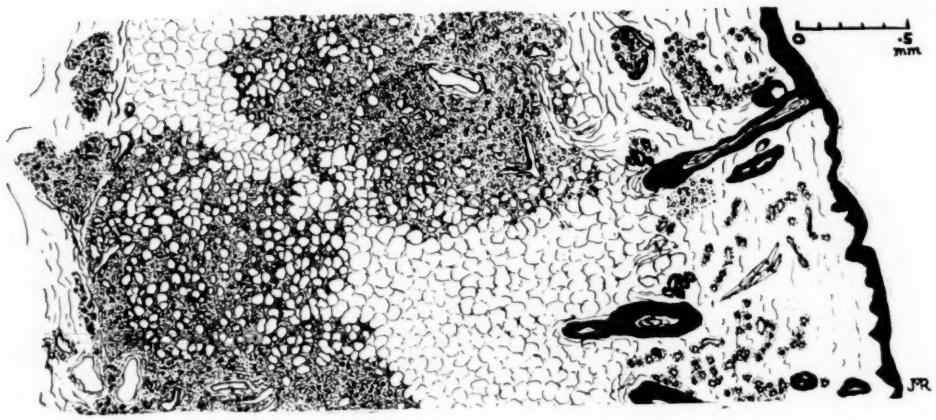


Low-power drawing of hæmangeioma of skin. The capillary structure is maintained but there is moderate proliferation of the endothelium.

[1] Kettle, E. H. (1919): On Polymorphism of the Malignant Epithelial Cell. Proceedings of the Royal Society of Medicine, Section of Pathology, vol. xii., p. 1.

[2] Kettle, E. H. (1918): Tumours arising from Endothelium. Proceedings of the Royal Society of Medicine, Section of Pathology, vol. xi., p. 19

FIG. 3.

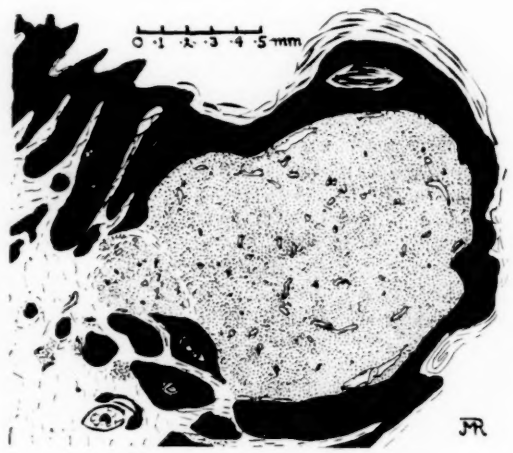


Low-power drawing of hæmangeioma of skin. The structure is more compact though capillaries are still well formed, especially beneath the epidermis. Infiltrative growth is well shown.

circulating blood. (Fig. 1.) In the more complex variety the angeiomatous structure is still maintained but the capillaries are lined by a double or triple layer of cells and the spaces between the closely set vessels are occupied by endothelial cells. (Figs. 2 and 3.) In the most atypical or compact form the tumour consists of a dense felted mass of endothelial cells and contains but few rudimentary capillaries. (Fig. 4.) It is not possible, however, to adopt any hard-and-fast classification along these lines, for intermediate forms, in which the capillary and the compact structure are both present, occur quite frequently, and there is an important group, an example of which was described in the article to which we have already referred, in which complex systems of simple capillaries are associated with areas of atypical solid growth. Most of these growths are comparatively innocent; only in the more compact forms do the numerous mitoses and the absence of well-developed capillaries suggest malignancy. But practically all of them have remarkable powers of infiltration; they are never encapsuled; their margins are ill-defined, and they extend widely throughout the subcutaneous tissues, or, should they be situated more deeply, among the individual fibres of muscle bundles. This, of course, is well recognised, and it is also generally agreed that the tumours increase in size from their own resources. In a few instances we believe that we have been able to trace connexions between the tumour capillaries and the normal vessels of the part, and it is possible, therefore, that there may be multiple foci of origin continuously developing. The evidence for this, however, is very meagre, and there is no doubt that usually increase in size is due to the actual proliferation of the tumour cells.

According to the generally accepted teaching, the growth of the hæmangeiomata takes place by a process of budding from the cells lining the capillaries. These buds grow out as long processes into the connective tissue, and eventually channels are formed by the approximation of adjacent processes or the splitting of parallel rows of cells. Fraser[3] states that "active proliferation of the endothelial cells is always occurring, and it is possible to demonstrate the development of fresh formation of vessels. Within the accumulation of several endothelial cells, which have proliferated from the walls of an existing vessel, a vacuole makes its appearance, and by its enlargement establishes the lumen of the future vessel. Around the central vacuole the endothelial cells become so arranged as to form the vessel wall." Our own observations suggest that the process is rather more complicated. The tumour cells are usually ill-defined. They possess a scanty reticulated cytoplasm and comparatively large oval or spheroidal nuclei, with a fine chromatin network. In the younger cells the cytoplasm is more dense and the cell outlines can be distinguished with ease, but in the older cells the cytoplasm becomes fibrillar or reticular, and it is scarcely possible to separate the individuals in the closely-packed masses of cells. There is one characteristic feature, however, which is constantly seen; that is, the development of small intracellular vacuoles, which gradually increase in size and flow together till eventually the greater part of the cell is occupied by a single vacuole around which the nucleus and the remains of the cytoplasm are folded and compressed. The next step is the rupture of the walls of adjacent cells, so that neighbouring vacuoles become thrown into one, and in this way irregular spaces are developed which in time come to contain blood. Though in many tumours these spaces remain more or less irregular in shape, in others the lining cells become arranged as a definite endothelium and practically normal capillaries are produced.

FIG. 4.



Low-power drawing of hæmangeioma of the skin. The tumour is solid and shows practically no capillary differentiation.

This, then, is the mode of growth of this particular group of tumours, and it recalls very closely the method of formation of vascular tissue from the primitive vaso-formative cells of the embryo. The cells of the tumour capillaries proliferate and extend as buds or processes into the neighbouring connective tissue. In

[3] Fraser, John (1920): The Hæmangioma Group of Endotheliomata, British Journal of Surgery, vol. vii., p. 335.

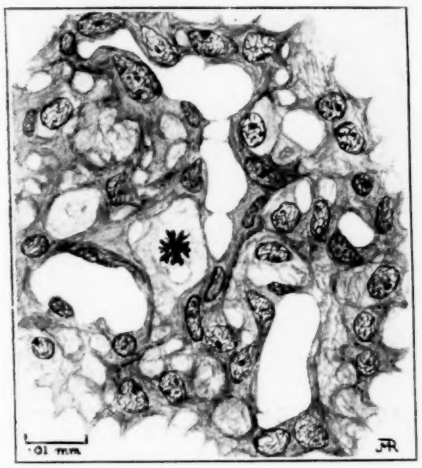
course of time they become vacuolated and the vacuoles of adjacent cells coalesce and establish communication with the parent capillary, and the nuclei with the remnants of the cytoplasm form an endothelium to the new-formed vessel. This process is illustrated in Figs. 5 to 7.

Fraser [4] states that these tumours spread by individual enthothelial cells which afterwards proliferate and become vacuolated, eventually forming the embryonic capillary tissue. But his description of the formation of capillaries in an earlier part of his article, which we have already quoted, suggests that the vacuoles arise by the grouping of neighbouring cells, not by development actually within the cell and it is this intracellular formation of vacuoles which we hold to be important. It is a common phenomenon in vascular endothelium under pathological conditions; it represents a fundamental property of the embryonic endothelial cell, and it is, we believe, the method of formation of lumina in endotheliomata of lymphatic as well as vascular origin. If we recognise that the lumina of endotheliomata are produced in a definite way, by an attempt at functional activity by the neoplastic cell, it should enable us to distinguish them from similar formations in the carcinomata either from necrosis or from incomplete development into glandular tissue.

More Complex Tumours.

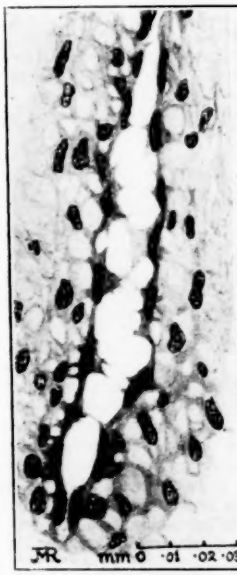
So far we have been dealing with tumours which can all be grouped as angeiomata—that is to say, they all show a greater or less degree of differentiation and form recognisably vascular tissue. Our material also contains a considerable number of hæmendotheliomata, tumours in which, while it is still possible to recognise the type cell, differentiation is rudimentary or absent altogether. It would serve no useful purpose to describe any number of these tumours in detail; one or two examples are sufficient. But we would emphasise the fact that when a diagnosis of endothelioma is possible in these more atypical forms it is because of the tendency of the tumour elements to revert to the primitive vaso-formative type of cell. We do not believe that any reliance should be placed upon the relationship of the vessels of the stroma to the tumour parenchyma, or upon the intimate association of blood corpuscles with the tumour cells. These are not features upon which the diagnosis of an endothelioma can be based. Another observation on which we would lay stress is a negative one, but not, we think, the less important for that. In our experience the neoplastic endothelial cell may assume one of three forms: it may revert to the primitive vaso-formative type of cell: it may lose all the characteristic features of endothelium and grow as a spindle cell, when it gives rise to a simple undifferentiated sarcoma; or it may develop into a flattened pavement type of cell, without, however, departing so far from the normal as to be

FIG. 5.



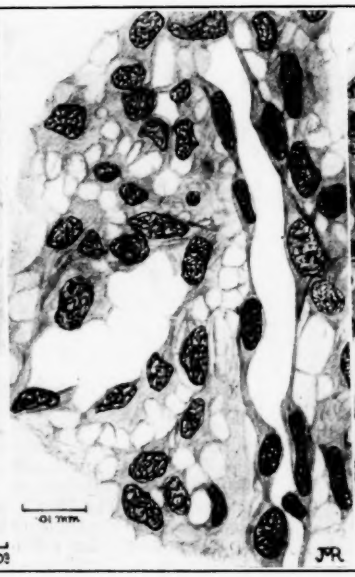
High-power drawing of a section of a submucous angeioma showing vacuolation of the cells with the formation of primitive capillaries.

FIG. 6.



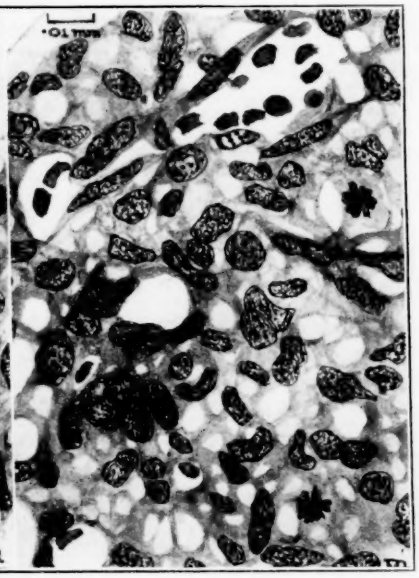
High-power drawing of another part of the tumour illustrated in Fig. 5, showing a further stage in the formation of a capillary from the tumour cells.

FIG. 7.



High-power drawing of a section from a subcutaneous angeioma showing a later stage in the formation of a capillary.

FIG. 8.



High-power drawing of section illustrated in Fig. 4. The tumour is growing rapidly, two mitotic figures are present in the field, and there is no true differentiation. Intracellular vacuoles are present, however, and irregular blood-containing spaces are formed by their coalescence.

[4] Loc. cit.

FIG. 9.

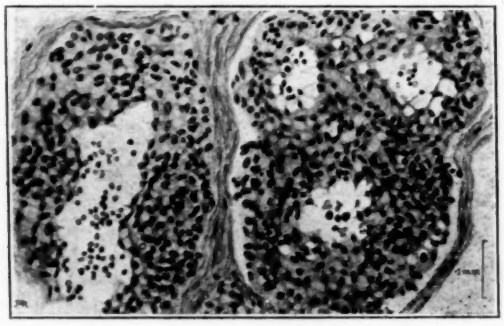
Low-power drawing of a hæmangeioma showing the alveolar type of growth.

unrecognisable. Within these limits it remains a comparatively simple element, and we have entirely failed to observe those extreme instances of polymorphism which are commonly held to be characteristic of endotheliomata.

Among the more common atypical endotheliomata is a group intermediate in structure between the hæmangeioma simplex and the pure sarcoma. One of these is illustrated in Fig. 8. Growth is rapid and mitotic figures are numerous, and though the tumours are not so densely cellular as the sarcomata they differ from the hæmangeiomata in that they do not form definite capillaries. Nevertheless, the fibrillar structure of the cells and the tendency they exhibit to the formation of vacuoles makes it possible to recognise them as endothelial in origin.

Another interesting variety is the alveolar type, in which the tumour cells do not grow diffusely but are arranged in alveoli, so that there is a sharp distinction between parenchyma and stroma, and the structure resembles that characteristic of the epithelial neoplasms.

FIG. 10.



High-power drawing of section illustrated in Fig. 9, showing the pseudo-peritheliomatous structure. The lumina do not represent the remains of blood vessels but are new formations due to the coalescence of intracellular vacuoles.

An example of this type is illustrated in Figs. 9 and 10. The tumour consists of alveoli or branching columns of cells, many of which present central lumina which contain blood. At first sight the structure would suggest a perithelioma, but Fig. 10 shows the true nature of the growth. The central lumina do not represent blood-vessels surrounded by tumour cells, but are actual new formations, and the stages in their development from intracellular vacuoles are shown very clearly.

Finally, we may refer to the type illustrated in Fig. 11. In this there is a tendency for the tumour cells to adopt a flattened squamous form, and though they exhibit cytoplasmic vacuoles their endothelial origin is chiefly revealed in the way they grow out on long processes which form the linings of irregular spaces.

Summary and Conclusions.

We have examined a large number of vascular tumours in the attempt to distinguish and define the characteristic features of the neoplastic endothelial cell and so place the diagnosis of the endotheliomata on a more secure basis. We have found that in tumours which can be recognised as of endothelial origin the cells invariably revert to the primitive vaso-formative

FIG. 11.

Hæmendothelioma of the orbit, showing a solid epithelial type of growth combined with the formation of endothelial processes.

type, and that this reversion is adequate to explain the structure and growth of these neoplasms. We suggest that the mere relation of tumour cells to blood-vessels or to circulating blood is not conclusive evidence of an endotheliomatous origin, and that there is no evidence that the cells of an endothelioma can so closely resemble those of a carcinoma as to give rise to confusion. It is possible that this polymorphism can occur, for under certain conditions endothelial cells, especially those of serous membranes, can assume a cubical or even columnar form, but it has not been observed in any of the endotheliomata which have been examined. On the other hand, the more atypical endotheliomata progress gradually to a type of growth which is indistinguishable from a spindle-celled sarcoma. But in these, as in the hypothetical carcinomatous forms, differentiation is entirely lost, so that it is no longer possible to distinguish their endothelial origin, and there is no justification for including them among the endotheliomata. This name should be kept for tumours which reveal in their structure definite evidence of having originated from endothelium.

THE RELATION OF THE LIVER TO THE DIFFERENCE VALUE OF THE BLOOD.

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AND
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IN a previous communication[1] we brought forward evidence to show that the relation between the difference value and the sugar content of the blood, estimated at hourly intervals before and after a test-meal taken fasting, furnishes evidence as to the functional efficiency of the pancreas, and that the increase in the difference value associated with disease of the pancreas is dependent upon a diminished control of the gland over the glycogenic ferment of the liver, owing probably to a lack of its internal secretion. At a later date it was stated in a paper read by one of us before the Medical Section of the Royal Society of Medicine[2] that disturbances in the functions of the liver also change the relation normally existing between the difference value and the sugar content of the blood, but that when the estimations are made at hourly intervals after a meal a difference-value curve of an entirely distinct character to that occurring in association with pancreatic insufficiency is found. In this paper we propose to consider the experimental evidence on which this conclusion is based, and to discuss its bearing upon the original problem of our research—namely, the origin and significance of the dextrinuria of pancreatic disease.

Unlike the difference value of the blood associated with disturbances of the functions of the pancreas, which is abnormally high in the fasting state (Fig. 1), the difference value in hepatic derangement is within the normal limit of 0·005 per cent. and is often zero in the early morning before any food has been taken. After breakfast it gradually rises and continues to increase for several hours independent of the fall in the blood sugar which usually occurs at, or about, the third hour after the meal, until a level which may be 10 or 12 times the highest normal limit of 0·010 per cent. is attained. (Fig. 2.) In some instances the rise in the difference value is rapid and reaches its maximum in four or five hours after the meal, in others it takes place more slowly and does not reach its highest point until after a lapse of seven or eight hours. In any case it bears no constant relation to the blood-sugar curve, in contrast to what is found in pancreatic disease, where the blood-sugar curve and difference-value curve move regularly in opposite directions.

In order to test the correctness of the hypothesis arrived at on clinical grounds that a difference-value curve of this description is associated with disturbances in the functions of the liver we proceeded to carry out a series of experiments upon animals and tried to produce the curve artificially by interfering with the functional efficiency of that organ. For this purpose we selected injections of hydrazine phosphate. It is well known that certain drugs, notably phosphorus, chloroform, brombenzol, and hydrazine, have a toxic action on the liver, causing changes similar to those met with in acute yellow atrophy. Of these hydrazine is peculiarly suited to the investigation of hepatic insufficiency, as it was shown by Wells[3] to have a selective action on the hepatic parenchyma, and histological examinations carried out by MacAdam[4] confirmed the limitation of the toxic effect of the drug to the liver. Borisow, who was the first to point out the toxic action of hydrazine salts upon the liver,[5] employed the sulphate, and most subsequent observers appear to have done the same, but as we were unable to obtain a supply we were obliged to use the only available compound, the phosphate. This was given subcutaneously in a neutralised 2·5 per cent. solution. According to MacAdam, the lethal dose of hydrazine sulphate for a dog varies between 0·07 and 0·10 g. per kilo of body weight. As preliminary experiments proved that 0·025 g. per kilo of hydrazine phosphate gave rise to a violent reaction, which persisted for several days, we subsequently gave only 0·0125 g. per kilo, a dose we found sufficient to produce distinct symptoms of hepatic disturbances in the shape of slight jaundice and diarrhœa, with disinclination for food, lasting for 24 to 48 hours.

We first investigated the effects of hydrazine phosphate injections upon the carbohydrate tolerance and difference value of the blood.

Two dogs were given repeated sublethal doses of 0·0125 g. per kilo, at weekly intervals, after the normal blood changes induced by a weighed quantity of dextrose in one case and of lævulose in the other had been ascertained. Two days after the third injection the same amount of lævulose, given under exactly similar conditions, was found

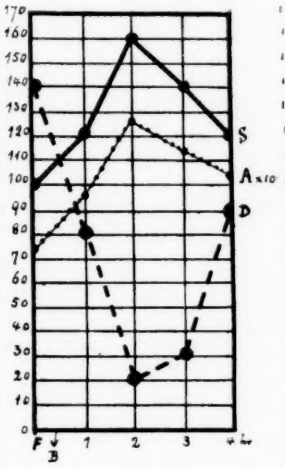


FIG. 1.—Chronic pancreatitis from invading gastric ulcer.

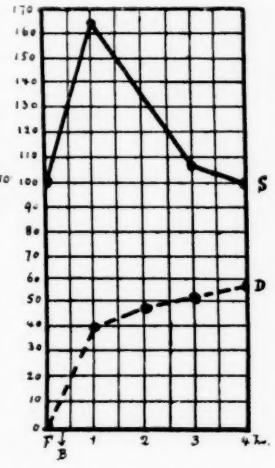


FIG. 2.—Hepatic insufficiency.

A, Amylolytic ferment × 10. F, Fasting. B, Breakfast. S, Blood sugar. D, Difference value.

to produce a decided increase in the sugar content of the blood (Fig. 3), with a slower return to the fasting level than before the injections had been commenced, but there was no marked change in the difference values. Examination of the urine of this dog showed that lævulose, 0·6 per cent., was present in the urine, and it continued to pass lævulose subsequently when on a diet of meat and dog-biscuit.

In the other dog dextrose by the mouth two days after the third injection of hydrazine gave results practically identical with those obtained under normal conditions as regards the sugar content of the blood, but the difference value was decidedly higher than when a similar dose of the sugar had been taken before the injections, and it rose to about double the normal height at the end of two hours in a curve of the "hepatic" type.

Two more injections of hydrazine were given and the dose of dextrose was then repeated. Again the sugar content of the blood showed no striking deviation from the normal (Fig. 4), but the difference value rose from a fasting level of 0·004 per cent. to 0·018 per cent. at the end of two hours.

From these experiments it would appear that the injections of hydrazine lowered the animal's tolerance for lævulose but had no appreciable effect on its powers of dealing with dextrose. On the other hand, the sugar, which was poorly tolerated and appeared in the urine, caused no striking change in the difference value of the blood, whereas that which was retained as well after as before the injections gave rise to a difference-value curve of the "hepatic" type, which became more marked as the number of injections was increased. According to Strauss[6] and others, a diminished tolerance

[1] THE LANCET, 1920, ii., 393.
[2] Ibid., 1921, i., 274.
[3] Jour. Exp. Med., 1908, x., 457.
[4] Jour. Path. and Bact., 1913-14, xviii., 281.
[5] Zeit. f. Phys. Chem., 1894, xix., S. 499.
[6] Deutsche med. Wochenschr., 1901, xliv.

for lævulose is, with few exceptions, a characteristic sign of hepatic insufficiency, so that its occurrence after hydrazine injections lends further support to the conclusion that this drug has a toxic effect on the liver. This being the case, we may infer that the abnormal difference-value curve following the ingestion of dextrose is probably also an indication of hepatic insufficiency. The absence of a similar curve after lævulose had been taken is not easy to explain unless we assume that, as this sugar passes through the liver unchanged to a considerable extent, it does not induce the same metabolic changes as dextrose.

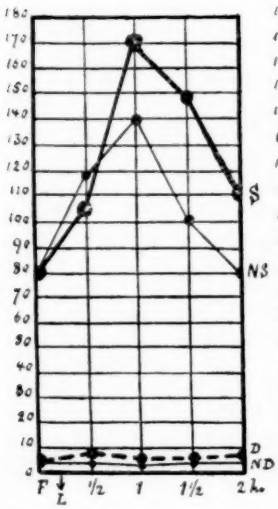


FIG. 3.—Lævulose after three hydrazine injections in a dog.

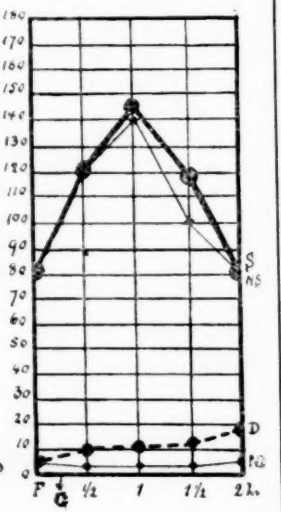


FIG. 4.—Dextrose after five hydrazine injections in a dog.

F, Fasting. L, Lævulose. G, dextrose. S, Blood sugar. N S, Normal blood sugar. D, Difference value. N D, Normal difference value.

An experiment carried out by one of us upon himself suggests that dextrose may interfere with the normal metabolism of the liver under certain circumstances, and at the same time shows that the "hepatic" difference-value curve is a very delicate index of the functional condition of the liver. In our experience dextrose taken fasting by a healthy person does not increase the difference value of the blood, the only effect being a slight drop when the sugar content of the blood reaches its maximum level at the end of the first hour; when, however, the sugar is taken at the highest point of the blood-sugar curve following an ordinary mixed meal a rise similar to that found in a dog poisoned with hydrazine can be produced.

A test breakfast was taken by the experimenter, and at the time previous experience had shown the highest point of the blood-sugar curve to occur with a similar meal, 20 g. of pure dextrose, dissolved in water, were swallowed. The result was that the percentage of sugar in the blood continued to rise for another hour instead of falling as it otherwise would have done, and, what is the chief point, the difference value rapidly increased and continued to do so for at least an hour and a half, far above what had been found when no sugar had been taken. (Fig. 5.) Shortly after the sugar had been swallowed the experimenter felt nauseated and experienced uncomfortable sensations in the abdomen similar to those complained of sometimes by children who have indulged freely in sweets between meals.

As rabbits are better suited for repeated blood analyses than dogs most of our observations were carried out on them, but, since no data concerning the fatal dose of hydrazine phosphate were available, we had first to determine it experimentally.

For this purpose a rabbit weighing 1 kg. was given a dose of 0·025 g. of neutralised hydrazine phosphate subcutaneously after a sample of blood had been taken from the marginal vein fasting, and again one hour after a mixed meal of oats and green food. Twenty-four hours later the animal had apparently suffered in no way from the dose, but its blood showed a rise in the difference value from 0·006 per cent., the previous fasting level, to 0·010 per cent., and a fall in the sugar from 0·086 per cent. to 0·074 per cent.; there was considerable lipæmia, but no change in the amylolytic ferment. Another injection of 0·05 g. of hydrazine phosphate was then given. Next day the animal refused food and was seriously ill, passing liquid bile-stained motions. Examination of the blood now showed an enormous increase in the difference value, which stood at 0·100 per cent., a sugar content of 0·050 per cent., and an entire absence of amylolytic ferment. Two days later it was found dead. Post mortem the liver was seen to be enlarged and of a yellow colour. Microscopical examination showed vacuolation of the protoplasm with coarse granular changes, feebly stained nuclei, and small localised deposits of fat staining deeply with osmic acid. No other pathological changes were discovered.

It was evident, therefore, that hydrazine phosphate in the doses given produced in the liver of the rabbit profound degenerative changes affecting both the cell nuclei and the cytoplasm.

Having learnt from this experiment that the liver of the herbivorous rabbit is more resistant to the toxic action of hydrazine phosphate than the liver of the carnivorous dog, so that 0·025 g. per kilo is not sufficient to produce serious disturbances in its functions, while a further dose of 0·05 g. produces fatal results, we proceeded to inject a series of rabbits with a medium dose of 0·05 g. per kilo and studied the effects of different diets. In each instance specimens of blood were taken from the marginal vein for analysis before the meal and at hourly intervals after for five or six hours on the second and successive days following the injection. Earlier observations on the effect of food were not possible as the animals refused to eat for the first 48 hours.

The first series of rabbits was fed on oats and cabbage. Two days after the injection the blood-sugar curve was found to follow a normal course for the first two hours after the test-meal (Fig. 6), but at the third hour the percentage of sugar was not as high as in a normal rabbit on similar food, and in the succeeding two hours it was still subnormal. By the fourth day after the injection this variation had disappeared and the sugar curve followed the same course as in a normal rabbit. (Fig. 7.) A much more striking change was found in the difference value. Forty-eight hours after the injection (Fig. 6) this stood at the normal level fasting, and showed only a very slight rise for two hours after the test-meal; it then increased rapidly, and at the fourth hour stood at ten times its previous height. After that there was a fall, which took place more slowly than the rise, so that at the sixth hour the fasting level had not been regained. The difference value four days after the injection

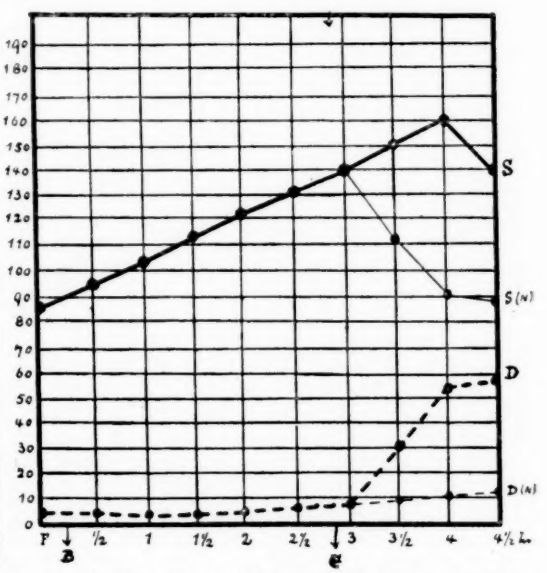


FIG. 5.—Dextrose after a meal in a healthy man. F, Fasting. B, Breakfast. G, Dextrose. S, Blood sugar. S (N), Blood sugar without dextrose. D, Difference value. D (N), Difference value without dextrose.

(Fig. 7) showed a similar rise, but it was slower in commencing, starting at the fourth hour instead of at the third, and failed to reach the same level at the maximum, five hours after the meal. On the seventh day (Fig. 8) the difference-value curve varied little from the normal, but still gave slightly higher figures at the fourth and fifth hours than in a healthy animal on the same food.

Another series of rabbits fed on thoroughly boiled (six hours) oatmeal porridge gave similar results, excepting that

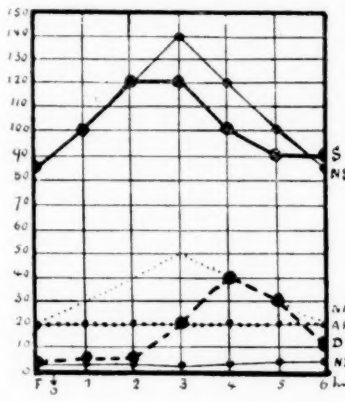


FIG. 6.—Two days after.

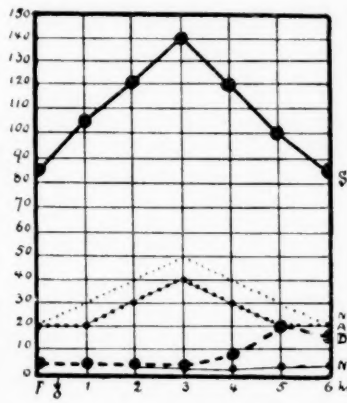


FIG. 7.—Four days after.

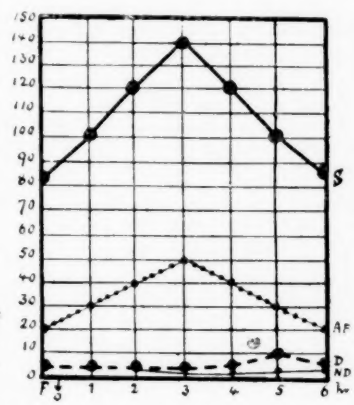


FIG. 8.—Seven days after.

Oats and cabbage in a rabbit after a hydrazine injection—

F, Fasting. O, Meal. S, Blood sugar. N S, Normal blood sugar. N A F, Normal amylolytic ferment × 10. A F, Amylolytic ferment × 10. D, Difference value. N D, Normal difference value.

48 hours after the injection the difference value commenced to rise an hour sooner and attained a maximum level 6 per cent. higher than had been found in animals fed on dry oats and cabbage. The delay in the rise in the difference value on the fourth and seventh days was likewise not so prolonged as in the other series, and on these days, too, the maximum height attained was about 10 per cent. greater than in the corresponding rabbits of the first series.

In order that we might compare the blood changes in carnivorous and herbivorous animals we injected a dog weighing 10 kilos with 0·25 g. of neutralised hydrazine phosphate. For the first 48 hours it refused all food and was then with difficulty induced to eat an ounce of meat. As will be seen from the chart (Fig. 9) the blood-sugar curve, after a slight preliminary drop at the first hour, rose more slowly than in a normal dog after a similar meal and failed to attain the same maximum level. Although the difference-value curve was similar in its course to that met with in rabbits on a carbohydrate diet, the increase was not as marked and the maximum level attained was only about four times the normal.

On comparing the difference-value curves produced experimentally in animals with those found in patients exhibiting clinical signs and symptoms of disturbance of the functions of the liver it will be seen that they correspond very closely; it seems justifiable to assume, therefore, that the presence of a curve of this description is indicative of functional inefficiency of the liver, in the same way as the type of curve we described in our previous paper is a sign of functional inefficiency of the pancreas. The question then arises whether the substance, or substances, giving rise to the difference value of the blood is the same in hepatic as in pancreatic disturbances.

Analyses of the urine of patients exhibiting a typical "hepatic" curve in their blood after a meal, and of animals in which hepatic disturbances have been produced by injections of hydrazine, have shown that the difference value of the urine, estimated at hourly intervals, moves in a curve corresponding to the variations in the difference value of the blood, in the same way as the difference value of the blood and the iodine coefficient or difference value of the urine correspond in pancreatic disease. This suggests that in both conditions the increase in the reducing power of the blood and urine after boiling with dilute acid is dependent upon the presence of a hydrolysable carbohydrate, and, since the carbohydrate in the urine has the chemical properties and composition of a dextrin, it is probable that the hydrolysable carbohydrate in the blood is also of a dextrin-like nature. In spite of the similarity of the reacting substance it is unlikely that its origin is the same in the two conditions however, for while the difference value is highest in pancreatic affections when the patient is fasting, it is then normal, or subnormal, in hepatic disorders; further, the difference value varies inversely as the percentage of sugar in the blood in diseases of the pancreas, but in affections of the liver it rises irrespective of any increase or decrease in the sugar, to which it bears no constant relation. The fact that the excursion of the difference-value curve of the blood above the normal, on the same diet, after a sublethal dose of hydrazine diminishes with the lapse of time, and as the injury of the liver is repaired, shows that the substance giving rise to the difference value in hepatic derangement is either formed by the liver in response to the ingestion of food or is a product which is normally intercepted and stored by the liver cells. That the latter is the more probable explanation is suggested by the higher difference value found in rabbits fed on thoroughly boiled oatmeal than in those receiving uncooked oats and raw cabbage. Uncooked oatmeal contains no dextrine and about 0·8 per cent. of reducing sugar; when coarse oatmeal is boiled with water the percentage of sugar slowly increases, so that at the end of six hours it attains to about 6 per cent., meanwhile dextrins appear and reach a maximum of about 45 per cent. between the sixth and seventh

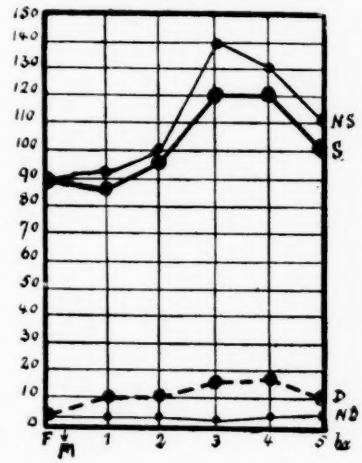


FIG. 9.—Meat in a dog, two days after a hydrazine injection. F, Fasting. M, Meat. N S, Normal blood sugar. S, Blood sugar. D, Difference value. N D, Normal difference value.

hours, after that the proportion of dextrin diminishes and the reducing sugar rapidly rises. Previous experiments[1] have proved that the mesenteric blood of rabbits fed on dextrinised (six-hour) oatmeal contains about 25 per cent. of dextrin compared with under 2 per cent. in oat-fed rabbits, but that the difference value of the peripheral blood in normal animals is the same on both diets. Since, therefore, the effect of hydrazine injections is to raise the difference value more when the mesenteric blood contains a higher proportion of dextrin it seems reasonable to infer that it is due to a diminished ability of the liver to retain dextrins coming to it from the intestine, and that they consequently leak into the peripheral blood. The slow and steady rise in the difference value, commencing more rapidly after a meal of dextrinised carbohydrate than after uncooked starch, and its persistence for several hours would be consistent with a gradual absorption from the alimentary tract, while the comparatively slight increase produced by a meat meal in the dog tends also to support this conclusion. Such an explanation would further account for the very delayed rise in the difference value sometimes met with in patients suffering from digestive disturbances, but not encountered in animals with presumably healthy digestive tracts.

Before coming to the conclusion definitely that the rise in the difference value of the blood following a meal in hepatic derangements is entirely and invariably due to the passage into the peripheral circulation of dextrins derived from the food, we must consider the effects following the injection of hydrazine in fasting animals. Small doses produce no characteristic change, but when larger injections are given the difference value of the blood rises, and shortly before death from a lethal dose it reaches a level far in excess of that encountered in any animal which has received only a sublethal dose, no matter what the nature of the diet. In spite of the high difference value of the blood the urine of such an animal gives a normal difference value and iodine coefficient, showing that in this case the hydrolysable carbohydrate of the blood does not pass through the kidneys. As the increase in the difference value occurs in a fasting animal, the substance giving rise to it cannot have come direct from the food. In a previous paper we showed that the substance giving rise to the high difference value in the fasting condition in pancreatic affections is probably derived from glycogen stored in the liver, and it seems likely that the increase in the difference value of the blood in a fasting animal the subject of a destructive lesion of the liver may have a similar source; but as the hydrolysable carbohydrate met with in pancreatic affections is dialysable and passes into the urine, whereas after a lethal dose of hydrazine it is non-dialysable and does not appear in the urine, it is evident that the circulating carbohydrate is not the same. The key to the different physical properties of the abnormal hydrolysable carbohydrates of the blood in the two conditions possibly lies in the absence of amylolytic ferment in the animals poisoned with hydrazine and its presence in excess in pancreatic lesions. In our experiments upon depancreatised dogs we found that the amylolytic ferment of the blood increased as the functional activity of the pancreas was interfered with by the excision of larger proportions of the gland, but that even when the whole organ had been removed the usual increase and decrease following a meal took place. From this we inferred that the ferment is not derived from the pancreas, but originates in some other tissue, which is under the control of the pancreas, however, probably through its internal secretion. The balance of evidence suggested that the liver is the most likely source of at least the bulk of the amylolytic ferment of the blood, and observations made in the course of these experiments tend to confirm this conclusion. In a fasting animal small doses of hydrazine produce no appreciable alteration in the ferment content of the blood, but as the amount of hydrazine injected is increased and more profound degenerative changes are produced in the liver the percentage of ferment steadily drops, so that eventually it disappears entirely some 24 hours before the animal succumbs to a fatal dose. If, then, as our previous experiments have suggested, the breaking down of stored glycogen in the liver is effected through the agency of an amylolytic ferment which passes into the circulation along with the products of its activity, the absence of such a ferment will probably be associated with a more or less complete failure of the usual hydrolytic processes, so that any glycogen set free by destructive changes in the hepatic parenchyma will appear in the blood as such, or in the form of some closely related non-dialysable compound, consequently the difference value of the blood will be raised but the iodine coefficient of the urine will be unaffected. When, on the other hand, the ferment is produced in increased amount it will break down glycogen through the usual dextrin stages to maltose and glucose, but more quickly and completely than normal: if the pancreas is still capable of exercising the controlling influence we have previously suggested it possesses, however, it may not be able to prevent the initial stages of the degradation of glycogen arising from the increased activity of the liver ferment, but it may interfere with their progress and cut them short to a considerable extent at the dextrin stage, so that dialysable substances of this nature pass into the circulation and, being excreted in the urine, raise the iodine coefficient in proportion to the increase in the difference value of the blood. If we apply a similar process of reasoning to the blood conditions produced by a meal in an animal which has previously received a sublethal dose of hydrazine it would appear likely that the rise in the difference value may be partly explained by changes in the liver similar to those following a lethal dose in a fasting animal, for on the second day after the injection the amylolytic ferment did not show the normal rise and fall corresponding to the sugar curve subsequent to the meal which had been met with in a normal animal on the same food; by the fourth day it rose a little, but more slowly and still not to the same maximum level as in health, but on the seventh day, when the animal had apparently recovered almost entirely from the effects of the drug, it followed a normal curve. Assuming, then, that a defective formation of amylolytic ferment is associated with retarded glycogen hydrolysis, the rise in the difference value, and especially that occurring two days after the injection and within three hours after the meal, might be due to dextrins derived from the liver store. That the rise in the earlier hours after the meal particularly is partly attributable to this cause is also suggested by the subnormal blood sugar, since, as we have already seen, one of the effects of a lethal dose of hydrazine is to depress the sugar content of the blood.

[1] THE LANCET, 1920, ii., 393.

Summary.

(1) The difference value of the blood, estimated at hourly intervals before and after a test-meal, follows an abnormal course in conditions where the functions of the liver are interfered with.

(2) This "hepatic" curve differs markedly from the type of curve associated with pancreatic affections previously described, and bears no constant relation to the sugar content of the blood.

(3) The increase in the difference value of the blood following a meal in disease of the liver is chiefly due to hydrolysable carbohydrate, probably of a dextrin-like nature, absorbed from the alimentary tract, which is permitted to pass through the liver into the peripheral circulation instead of being retained as it is normally.

(4) Dextrin-like bodies derived from the glycogen store of the liver may be a contributory factor in the production of the raised difference value under certain circumstances.

(5) Destructive changes in the hepatic parenchyma are associated with a diminution of the amylolytic ferment content of the blood, thus tending to confirm the conclusion that the liver is the main source of that ferment.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CONDITION SUGGESTING LUPUS PERNIO IN A CHILD.[1]

BY F. PARKES WEBER, M.A., M.D., F.R.C.P. LOND.

THE patient, a boy aged 2½ years, shows a remarkable condition of his face, hands, and feet. This condition, in regard to the hands and feet, might almost be termed "acrodermatitis chronica mutilans."

There is extreme redness, sometimes associated with lividity, of the cheeks and chin. On the cheeks there are also fine hair-like superficial telangiectases. The skin of the cheeks is slightly scaly, and feels slightly thickened and infiltrated when one pinches it up. The edges of the pinnæ of the ears are very hyperæmic and also scaly, as in the subjects of so-called "chilblainy circulation" during winter. There is ozæna, with an offensive muco-purulent discharge from the nose, the bridge of which is very depressed. The arms and legs show red, sometimes livid, reticular mottling. The hands present a very mutilated appearance, especially the right hand, the tips of some of the fingers having been lost by gangrene or ulceration The skin of the hands has sometimes been swollen and red or cyanotic, but lately has become less turgid and paler. None of the toes have been lost, but the feet have been swollen and red or livid, like the hands; in the sole of each foot there is an irregularly shaped, chronic ulcer. Of late the feet have been less swollen and paler, and the ulcers have become smaller.

Otherwise the child's condition does not appear bad. Mental development seems to be normal. There is occasional moderate fever, probably connected chiefly with the nasal disease. There is no evidence of disease in the thoracic or abdominal viscera, excepting that a Rontgen skiagram of the thorax (Dr. James Metcalfe, March, 1921) shows a chain of enlarged hilus glands on the right and some hilus thickening on the left side; also slight shadowing in the mediastinal area. There is no enlargement of the superficial lymphatic glands nor of the liver or spleen. The urine is free from albumin and sugar. Blood count (March, 1921): erythrocytes 4,300,000, and white cells 6100, to the cubic millimetre of blood; hæmoglobin 90 per cent. The differential count of white cells gave: lymphocytes, 38·3 per cent.; polymorphonuclear leucocytes, 61·7 per cent.; no eosinophiles or mast cells were seen during the count. There was no poikilocytosis or polychromatophilia, and no abnormal cells of any kind were found. Rontgen skiagrams of the hands show, besides more or less complete loss of some of the phalanges (owing to the tips of some of the fingers having been destroyed), small areas of imperfect calcification or of decalcification (such, as Dr. H. G. Adamson kindly tells me, have been noted in cases of lupus pernio). A microscopical ("biopsy") examination of a small piece removed (Feb. 28th, 1921) from the edge of the chronic ulcer on one foot showed the corium permeated with lymphocytes, plasma cells, and fibroblasts; no giant cells and no tubercle bacilli discovered.

The patient's parents are apparently quite healthy, and their other child is a bright, well-built, normal-looking boy, aged 8½ years. The mother has had no other children and no miscarriages. The blood serum of both the patient and his mother gave a negative Wassermann reaction on two occasions. This was when the patient was under Dr. E. A. Cockayne's care, previously to Oct. 22nd, 1920, when he first came under my care. Dr. Cockayne also kindly informs me that an acid-fast bacillus was discovered in the nasal discharge. For the early history of the case I must refer to Dr. Cockayne's account.[2] When Dr. Cockayne showed the case (January, 1920) I agreed with him that it was one of a kind of sclerodactylia. Afterwards, in spite of the patient's early age, I thought that it was allied to lupus erythematosus, and Dr. Adamson suggested that it more nearly resembled lupus pernio. The symptoms in the left hand apparently commenced at 3 weeks of age. The offensive nasal discharge was first noticed at the age of 10 weeks, and has continued on and off since then. The child was breast-fed for the first seven weeks of life, and then brought up on various milk foods. There seems lately to have been a slight improvement under arsenical treatment. A thorough trial of mercurial treatment was made by Dr. Cockayne, but with no obvious benefit. Benzyl-benzoate, pituitary gland substance (by the mouth), and adrenalin (subcutaneous injections) have also been given, but without any striking good result. The child's weight on Oct. 25th, 1920, was 1 st. 3 lb. 1 oz.; and on March 14th, 1921, it was 1 st. 5 lb. 11 oz.

Dr. J. H. Sequeira has suggested that the case may be an exaggerated example of the toxic condition in very young children, described as "erythroedema," by Dr. H. Swift and Dr. A. J. Wood, and previously spoken of by Dr. W. Snowball (Melbourne, Australia) as "raw-beef hands and feet."[3]

[1] The case was demonstrated at the Dermatological Section of the Royal Society of Medicine on April 21st, 1921; and also at the Section for the Study of Disease in Children, on April 22nd.

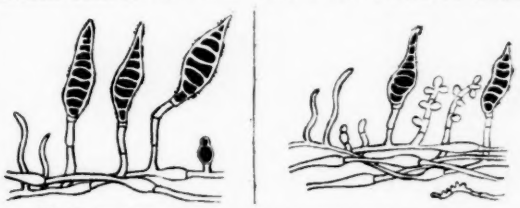
[2] Proc. Roy. Soc. Med., Section for the Study of Disease in Children, 1919-1920, xiii., pp. 50-52.

A NEW VARIETY OF RINGWORM.

BY ROBERT CRAIK, M.D. GLASG.

A HEALTHY girl, aged 21, had in October, 1916, a skin eruption on her thigh. It began a fortnight before as a small red point which was thought to be a bite, and was now about the size of a shilling and quite suggestive of ringworm. Fine scales showed plenty of mycelium. The source of infection remained unknown. Treatment was soon successful.

Seeded on wort agar fine particles gave good growths. At first grey and semi-transparent, after the sixth day, at room temperature, a white floury centre appeared and spread over most of the culture. In plate cultures this centre, under a low power, was a forest of upstanding, large, rough, multiseptate spindles; and the peripheral zone showed matted mycelium with a smooth surface on which were a few scattered small



The figure shows *M. audouini* var. *canis* on the right and the new variety on the left.

spindles and a few simple, attenuated, sterile, aerial hyphæ. Under a higher power (1/6 in.) a slide preparation showed pyriform swelling at the septa in several hyphæ; many large spindles were seen to have 6–9 septa and thick walls conspicuously rough on the outside. Repeated culture on several media at various temperatures gave no material change except in rate of growth.

1. The pyriform swellings at the septa, even in young cultures, are characteristic of microsporon.

2. The floury centre contrasts with the downy centre of *M. audouini*. Microscopically total absence of acladium conidiophores explains this, for these are abundant on all media in microsporon of the child, and form the white down on its cultures. The multitudes of coarse spindles forming the floury centre are not present in microsporon of the child, which is remarkable for scarcity of little divided spindles.

3. In microsporon of the dog large spindles are fairly numerous, but its cultures also bear numerous acladium conidiophores—one is as important as the other. Under stress of circumstance the new organism has completely scrapped the primitive acladium conidiophore and staked its existence on multilocular spindles, which it produces in countless numbers.

The microsporons are usually regarded as one species, *M. audouini*, with two varieties—*M. audouini* var. *canis* and var. *equinum*. Obviously var. *canis* is only halfway between *M. audouini* and the new variety which deserves the name var. *macrosporium*. This plurality of conidial forms in microsporon, these elaborate multilocular spindles and the constantly hall-marked mycelium, are reminiscent of certain higher ascomycetes. Under pathogenic conditions such forms are never seen. It is to be inferred that such an organism, growing well on ordinary media at ordinary temperatures and passing through a parasitic phase in which development is much restricted, leads a double life in nature for which the conidial forms are designed.

Ealing, W.

Cf. annotation on the subject in THE LANCET, 1921, i., 87.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on May 5th, Professor HENRY BRIGGS, the President, being in the chair.

Mr. HENRY CURTIS communicated a case of

Angioma of the Vagina Spontaneously Evacuated.

The patient was a single woman with intact septate hymen. Two years before being seen by Mr. Curtis the patient, then aged 32, for the first time became aware of a protrusion from the vagina, which remained for a month and then gradually receded. Six months after it had completely disappeared, but reappeared five months later, and thenceforward regularly a few days before each period. Its appearance was associated with aching pains across the back at the bottom of the spine. The protrusion was described as appearing in the form of two or three lobes, usually of a bright red colour, but rarely dark red. On two or three occasions it projected for half an inch or more, but receded when the patient lay down, and it disappeared with the period. On examination a narrow hymeneal orifice, obstructed and reduced in size by an obliquely placed bar-like septum was found. The urethral orifice was normal, and showed no trace of a caruncle. Nothing abnormal could be detected within the vagina or external to the hymen. A few months after her first visit the patient stated that at the end of a period, after some offensive discharge, a fleshy mass had been spontaneously expelled from the vagina. On examination no trace of a pedicle or of any nævoid structure could be detected. Mr. Curtis suggested that the septate condition of the hymen had strangulated the growth and helped to cut through the pedicle. Six months later there had been no local recurrence. The fleshy mass expelled was of a pinkish-red colour, resembling a blood-clot. The specimen, when imbedded in paraffin, measured 2·7 cm. by 0·9 cm.

Mr. Curtis considered that the growth could not have arisen from a caruncle, and that though its surface had been denuded of epithelium its origin from the vagina rather than from the cervix or body of the uterus was indicated by the absence of any glandular tissue and characteristic stroma. Dr. E. H. Shaw had made a report on the microscopic appearance of the tumour, in which he stated that it was most probably a nævus, and gave his reasons for suggesting that a nævoid hypertrophy of one of the rugæ of the vagina was the most likely origin.

Dr. H. RUSSELL ANDREWS showed a specimen of

Carcinoma of the Uterus originating in an Adenomyoma.

The patient, a single woman aged 52, was sent to him in November, 1920. The menstrual periods had stopped completely three years previously after almost continuous bleeding for a year. In July, 1920, there was slight bleeding, and in September four weeks' bleeding ending with a flooding, but no hæmorrhage during the last month. She was well-nourished and had not lost flesh; for five or six months she had felt tired and had had some pain in the right iliac fossa. Lately there had been "neuralgic pain" in the lower abdomen. Nothing abnormal was found on abdominal examination. On bimanual examination the cervix was found to be normal; the body of the uterus was considerably enlarged. Under an anæsthetic the body of the uterus was found to be as large as a three months pregnancy. Dr. Andrews thought that the condition was probably carcinoma of the body of the uterus with fibroids and proceeded to perform hysterectomy. The operation was difficult, as the rectum was adherent to the back of the uterus and the parametrium was dense and inelastic, making dissection difficult. The pelvic peritoneum was studied with minute nodules resembling miliary tubercles. Both tubes were considerably enlarged and contained caseous material. The patient made a good recovery and was in good health five months after the operation.

Naked-eye description of the uterus and tubes.—The uterus measures 12 × 9·5 × 9 cm. The peritoneum is covered with coarse, fibrous tags and has scattered over it raised, solid, pink nodules of various sizes, most of them very small. The wall is soft, except in the fundus and the right cornu where there are two rounded nodules, which on section show a pink and white whorled surface and a few small cystic spaces. The endometrium is smooth and thin. The cavity of the uterus is irregular and enlarged. Both tubes are thickened and contain white or grey caseous material.

Microscopical appearances.—The endometrium is atrophic and shows no malignant change. Sections taken from various parts of the uterine wall show carcinomatous change in an adenomyoma. A few small areas of unchanged adenomyoma can be found. The nodules seen in the peritoneum consist of tubular or solid columnar-celled carcinoma. Both Fallopian tubes are filled with the same growth.

Dr. Andrews said that cases of adenomyoma becoming carcinomatous with no carcinomatous change to be found in the endometrium were very rare. On the suggestion of Dr. HERBERT SPENCER the specimen was referred to the Pathological Committee.

Dr. ARTHUR E. GILES opened a discussion on

THE PROGNOSIS AND TREATMENT OF STERILITY.

He said that he proposed to touch on two of the general aspects of the subject, the prevalence of sterility and the responsibility of the male partner, and then to sketch out three types of sterility in women, viewed from the standpoint of prognosis and treatment: Inevitable and incurable sterility, functional sterility, and conditions that cause or favour sterility but allow of treatment. Data and statistics referred to were derived from his recent monograph.[1]

The Prevalence of Sterility.

Estimates of the proportion of infertile marriages varied with different authors and in different countries between 2 and 20 per cent.

Dr. Giles's own case papers showed that among 3128 married women who were seen *as patients* the percentage of sterile cases was 22·2. Many of these were still young; when he took into consideration only women who had reached the age of 40 the percentage dropped to 15·3. In a large proportion of cases the women sought advice on account of some disease of the reproductive organs; and it was therefore certain that among an equal number drawn from the community at large the proportion of sterile women would be notably less. In Dr. Giles's opinion the proportion of sterile marriages in this country was well below 15 per cent. Difficulties in comparing statistics given by various writers arose because still-births were taken into account by some but not by others, while miscarriages and extra-uterine pregnancies were mostly overlooked or ignored. A woman who has conceived should not be regarded as sterile, even though the ultimate product of conception were not a living child. Dr. Giles was disposed to regard as being nearest to the truth the estimate of Simpson, who found the proportion of unfruitful marriages to be 10·9 per cent. in village communities and 16·3 per cent. in families of the aristocracy. The ratio was probably higher in towns than in the country. In any case the proportion was undesirably and unnecessarily high, the actual figures being of only academic interest. The only way to obtain a really reliable estimate of the number of unproductive marriages would be to get the particulars of at least 1000 marriages in which the wife was under 35 and the husband under 40 at the time of marriage and married life had lasted at least 15 years. But even these figures would not tell us the proportion of sterile *women* in the community, because in a number of cases the husband would be at fault.

The Responsibility of the Male Partner.

Estimates varied widely as to the proportion of cases in which the husband is to blame. Court placed it at 10 per cent., Duncan at 12 per cent., Brothers at 20 per cent. (based on 250 cases), Engelmann at 25 per cent., Hühner at 41 per cent. (186 cases), and Noeggerath at 90 per cent.

Noeggerath was apparently obsessed by the idea that gonorrhœa was the one important factor in the causation of sterility, and both he and Engelmann include under man's responsibility all cases of disease in the female which are directly traceable to the male. Dr. Giles pointed out that while it was no doubt morally justifiable to blame the man who had made his wife sterile by giving her gonorrhœa, from the statistical point of view this led to fallacious results; for while the woman whose tubes have been destroyed by gonorrhœa is permanently sterile, the man who infected her may remain quite capable of procreating children. But the actual figures were less important than the recognition of the principle that in doubtful cases the responsibility of the wife should not be assumed, and that she should not be submitted to operative procedures before definite evidence that the husband is healthy has been obtained.

[1] Sterility in Women. By Arthur E. Giles, M.D., &c. London: Henry Frowde, Hodder and Stoughton, Oxford University Press. 1919.

Inevitable and Incurable Sterility in Women.

Cases of incurable sterility were easier to recognise if the conditions necessary for successful impregnation were borne in mind. These were, on the man's part, ability to deposit healthy seminal fluid in contact with the os externum cervicis; on the woman's part, (1) ability to receive this fluid in contact with the cervix; (2) such a healthy condition of uterus, tubes, and ovaries as would enable the spermatozoa to travel up to meet the ovum; (3) the production and discharge of healthy ova; and (4) such a healthy condition of the uterus as would enable it to harbour the fertilised ovum. Considering only the woman's side of the question, Dr. Giles said that under the first heading the conditions that caused sterility were absence of the vagina and want of communication between the vagina and the uterus.

Dr. Giles quoted cases in which the patient had stated that intercourse was normal and on examination it was found that the vagina ended blindly in a cul-de-sac. In such a case the woman had never menstruated. Sometimes the lower end of the vagina was patent, and to tell whether there was merely a septum across an otherwise developed vagina, or whether the upper part of the vagina was absent, a dissection of the parts might be necessary. The construction of an artificial vagina in the absence of a natural one Dr. Giles considered a hopeless procedure from the point of view of sterility and an unnecessary one from any point of view. The second condition for impregnation was unfulfilled in the absence or marked under-development of the uterus in congenital atresia of the tubes and in occlusion of the tubal channel by inflammation. Pyosalpinx, which was due to gonorrhœa in about 95 per cent. of cases and to tuberculosis or *B. coli* infection in the remaining 5 per cent., certainly caused incurable sterility. Whether a tube that had become occluded by mild salpingitis could be made functionable by surgical means was doubtful. The third condition for conception, the production by the ovary of healthy ova, was very difficult to estimate. Since age and the action of X rays lead to ovarian atrophy we might presume that when this atrophy has come about ovulation ceases. But there are other conditions that apparently interfere with normal ovulation; for example, anæmia, chronic drug taking, certain febrile and some nerve conditions, including pituitary disease. Obesity might come into this category; certainly obesity and sterility were related; but whether as cause and effect, or whether both were the results of some disturbed metabolic process, we did not know. Nor did we know what factors disturbed normal ovulation, nor what was the influence, if any, of internal secretions thereon. If any product of internal secretion did play a part, the ovarian secretion was probably a product of ovulation rather than a causal factor in the process. The fourth condition was not strictly one upon which successful impregnation depends, since failure therein led to miscarriage, not to sterility. But patients were concerned less with the possibilities of conception than with the chances of having a living child. From this point of view cases of uterine tuberculosis, carcinoma and sarcoma of the body of the uterus, and uterine fibrosis must be regarded as hopeless and incurable. In the last-named condition the absence of the mucosa rendered impossible what has been described as the "nidation of the ovum."

Functional Sterility.

When a childless woman who had been married for some years gave a history of regular menstruation without undue loss or unusual pain, and on examination the pelvic organs appeared to be normal, the case might be regarded as one of functional sterility. There were then several possibilities to be considered. In the first place, complete intercourse might not for various reasons have taken place: secondly, the husband might be suffering from azoöspermia or from a deficient vitality of spermatozoa; and thirdly, it might be an instance of "sexual incompatibility." There existed cases where a husband and wife had been unable to effect a conception together and yet each had been fertile with a different mate.

Conditions that Cause or Favour Sterility but Allow of Treatment.

Considering the conditions that prevent normal intercourse Dr. Giles said that atresia of the vaginal orifice was a curable condition; but the prognosis as regards sterility depended on the stage at which treatment was undertaken. If the products of menstruation had been accumulating in the closed vagina for some time secondary changes inimical to conception might be set up in the mucosa of the uterus, and later in the tubes. But if the patency of the vagina was established early there was a good prospect of fertility.

In stenosis of the vagina and rigidity of the hymen dilatation of the vaginal orifice under anæsthesia by means of the fingers or with graduated specula is often sufficient, while in more pronounced cases of stenosis the vaginal wall should be incised vertically, and the resulting wound sewn up transversely. The prognosis was very good. In treating dyspareunia and vaginismus the source of pain during intercourse should be sought; it was most frequently in the neighbourhood of the vaginal orifice and the remedy was usually simple. More deeply seated pain might be due to a prolapsed ovary or some inflammatory condition of the appendages and abdominal operation might be needed. Inflammatory disease would, of course, require treatment on its own account, apart from the question of sterility; but a prolapsed ovary could be sutured up, and if associated with retroversion, the fixing of the uterus in place was often sufficient to lift the ovary out of the painful zone. Vaginismus was more difficult to treat; but a good dilatation of the vaginal orifice under anæsthesia would often help matters. This was a condition in which suggestion might play a useful part. Once the mechanical difficulty was overcome the prognosis as regards sterility was good, as long as the patient had not waited until she was handicapped by the factor of age. Tumours encroaching on the vagina, such as an ovarian tumour or a uterine fibroid situated in the pelvis, might cause a mechanical obstacle to intercourse. The treatment was, of course, surgical, and the prognosis depended on the possibility of leaving at least one ovary and a not too much damaged uterus. Dr. Giles gave details of a case in which a patient became pregnant three months after a myomectomy and hysteropexy, and had a normal confinement. Prolapse and procidentia were usually the sequel of child-bearing, and thus caused secondary rather than primary sterility. Dr. Giles preferred operative to pessary treatment, and had many records of pregnancy and normal confinement following hysteropexy for prolapse and procidentia.

Among conditions that allow intercourse but interfere with ascent of the spermatozoa, Dr. Giles mentioned underdevelopment of the uterus, in which condition the prognosis depended mainly on the patient's age, anteflexion of the uterus, and stenosis of the external os. If a proper dilatation of the cervical canal were carried out, especially if followed by the insertion of an intra-uterine stem for a fortnight, the chances of subsequent pregnancy were very good.

Retroversion of the uterus was another condition unfavourable to conception, but not definitely preventing it. In atresia of the os externum prognosis was hopeless without treatment and not very good with it. As a rule, such atresia was the result of inflammatory conditions, which were likely to have other bad effects on the uterus besides closing its orifice. Nevertheless, in Dr. Giles's opinion, an attempt should be made to restore the patency of the canal. Polypi, fibroid and mucous, and submucous fibroids were in nearly every case curable, and prognosis varied with the gravity of the operation required. In endometritis conception was prevented probably by the injurious effect of the discharge on the vitality of the spermatozoa; where conception occurred the mucosa was in some cases not healthy enough to harbour the oösperm and miscarriage followed. The prognosis after curetting was good. In cases of mild salpingitis without occlusion of the tubal ostia, conception could take place, and the sequel was probably often a tubal pregnancy. However, it might be presumed that uterine pregnancy also followed. When salpingitis with occlusion was present conception was impossible. Where there had not been extensive suppuration or damage to the tubes an artificial ostium could be made by making an incision in the tube near the ovary and oversewing the edges. The prognosis should be very guarded.

Dr. Giles then mentioned certain methods of treatment that have a place when the cause of sterility lies with the man, and, in conclusion, laid special emphasis on the importance of considering the possible responsibility of the husband; on the folly of promising a successful issue as the result of treatment, for though we might secure correct anatomical conditions, we could not control their physiological working. The idea that every sterile woman should be curetted ought to be discouraged; in fact, no operation on a woman should be undertaken before the condition of the husband had been ascertained.

Discussion.

The PRESIDENT congratulated Dr. Giles on his paper, and emphasised the importance of the subject from the personal and racial standpoint.

Dr. R. A. GIBBONS agreed with Dr. Giles on the difficulty of collecting reliable statistics. When Matthews Duncan made his estimates the so-called Malthusian methods were not so widely used. Incidentally, Dr. Gibbons reminded the section that Malthus had spoken of war, pestilence, and famine as natural checks to over-production, and his advice had been that those who could not afford to have children to refrain from marriage, not to use contraceptives. Nowadays it was common for a young married woman to ask her medical man for advice as to the best method of preventing conception. The test of relative sterility was the rapidity with which conception takes place.

Dr. Gibbons had made confidential inquiries in 120 marriages. In 100 cases preventive measures had been used at one time or another, and the number of children was well under 2 per marriage. A declining birth-rate was a disastrous thing for a nation. In Paris some time ago the birth-rate was 10·4 in the poorer quarters and only 3·4 in a rich quarter of the city; in London comparative figures had been given as 19·5 and 6·3 in poor and rich quarters. These and similar figures showed that women living in comfort and luxury did not want to be bothered with confinements. It had been said that the degree of sterility could be regarded as an index to the morals of a race. Congenital sterility was rare, but the number of children born in England was decreasing. It had been estimated that one-third of the pregnancies of several great cities abroad aborted. Dr. Gibbons quoted figures given by Douglas Wright and Amand Routh to show the high percentage of abortions and stillbirths. In his opinion it was the duty of medical men to point out to the public that physiological laws could not be broken with impunity. It had been observed that if the doe were withheld from the buck at œstral periods atrophy of the ovary took place. In this connexion Dr. Gibbons recalled a large number of patients who had used contraceptives in early married life, and subsequently had longed in vain for a child. This applied also to those who had decided after the first baby to have no more children, and had subsequently regretted their decision.

Dr. MALCOLM DONALDSON expressed his appreciation of Dr. Giles's paper. He was most interested in cases of sterile women who proved normal on physical examination, and their husbands also, and wished Dr. Giles had spent more time on the discussion of these cases. Dr. Donaldson had examined nine women on 22 occasions to see how far up the canal spermatozoa could be traced, without getting conclusive results. Mr. Kenneth Walker had coöperated with him by examining the husbands. Dr. Donaldson asked Dr. Giles whether he considered that estimation of the acidity of the cervical discharge would be useful, and whether he had tried passing oxygen through the uterus to see whether the tubes were patent. He had thought that everyone nowadays examined the husband before submitting the wife to operation, but he had recently found aspermia in a husband whose wife had given a history of two curettings.

Mr. KENNETH WALKER spoke of the results of examinations of men. The statistics of male sterility recorded varied from 18 to 50 per cent. His own series was not really sufficiently large to speak about, but he wanted to emphasise the fact that a large number of men were relatively sterile. Spermatozoa were sometimes scanty in number, and in other cases were of abnormal shapes and sizes, or had more than one head. Occasionally signs of old inflammatory trouble could be detected in the prostate, or crystals of cholesterin in the semen. In 60 per cent. of the cases, where no definite physical abnormality was found in the wife, he would be inclined to blame the husband, and in another 30 per cent. something could be found wrong, enough to say that the man was not quite normal. The genito-urinary surgeon knew very little about the function of the prostate and the seminal vesicles. If the vesicles alone were excised the male remained fertile, also if the prostate was excised, but in the absence of both prostate and vesicles he was sterile. This subject had been very thoroughly investigated in rats. Even if spermatozoa were found in the semen the fault might still lie in the accessory glands of the husband. Detailed and careful overhauling of the husband was needed before it could be assumed for certain that he was not at fault.

Dr. HERBERT SPENCER expressed his agreement with Dr. Giles's condemnation of the operation for an artificial vagina. He disagreed with him on the subject of fixation of the uterus for prolapse and considered that this operation ought to be expunged from the list of operations performed. He was not satisfied with the results of dilatation of a pinhole cervix, and had had better results with Pozzi's operation. He agreed as to the number of women who, after using contraceptives at first, later wanted a child and did not have one. Many of these had used quinine pessaries. Possibly a thickening of the mucous membrane or other alteration followed the use of these pessaries.

Professor LOUISA MCILROY regretted that Dr. Giles had in his interesting paper dwelt so much on pathological conditions. In her opinion we had almost exhausted the pathology of sterility, and the most interesting cases were those which showed no physical signs. The really important aspect of the subject was the consideration of the biological and physiological factors influencing fertility. Professor McIlroy rejoiced that Dr. Giles had not laid excessive emphasis on syphilis as a cause for repeated abortions, as this idea was, in her opinion, much overdone at present. A positive W.R. was not of much value in pregnancy. Certain work on the ductless glands had convinced Professor McIlroy that the ovum was a ductless gland; possibly other ductless glands might have an inhibitory effect on the ovum. In cows a persistent corpus luteum was supposed to prevent pregnancy, and farmers had attempted massage through the vagina. Professor McIlroy deplored the amount of time spent on attempting to cure sterility when contraceptives were so widely used. She said that the fact that neuroses were largely the result of the use of contraceptives should be made widely known, and also that in women the maternal passion was even stronger, though it might develop later, than sexual passion, and would ultimately demand satisfaction.

Dr. J. S. FAIRBAIRN congratulated Dr. Giles on having made the subject as little barren as possible. Professor Arthur Robinson had recently given the results of an investigation into sterility in animals. Among stallions 30 to 40 per cent. of the matings proved sterile. In ferrets a large percentage of fertilised ova became degenerate and did not proceed to normal development. The deduction to be drawn from these investigations was that abortion was often wrongly ascribed to endometritis, &c., in the human subject.

Reply.

In reply Dr. GILES endorsed Dr. Gibbons's remarks as to the great unhappiness resulting from deliberately childless marriages, and had always warned patients of this. He believed that quinine had a permanently bad effect. Those who waited to have a child for a convenient season often laid up trouble for themselves. On the question of fibroids he had come to the conclusion that these were not a cause but in a sense a consequence of sterility. Women who were subjected to sexual excitement with no physiological outlet appeared to have a tendency to develop fibroids. He would like the opinion to go forth from the section that the use of contraceptives was a bad thing. He agreed with Dr. Donaldson and Professor McIlroy that the apparently normal cases were the most difficult, but he had not said more on this subject because of our profound ignorance thereon. As to the reaction of the cervical secretion the normal reaction was of course alkaline. After endometritis it might become acid, and spermatozoa could not live in an acid medium. He had not tried the injection of oxygen for diagnostic purposes. He was interested in Mr. Kenneth Walker's remarks as to the large percentage of defect traceable to the male partner. It must be borne in mind that the success of treatment was difficult to estimate, since in some cases after many years conception occurred spontaneously. He had heard of one case where pregnancy was reported to have occurred after 20 years of sterility. Changes in habits were also a factor; too great frequency of intercourse might prevent conception, whereas rest and change often proved beneficial.

LIVERPOOL MEDICAL INSTITUTION.

THE last ordinary meeting of the session was held on April 28th, Dr. J. E. GEMMELL, the President, in the chair.

Dr. FRANK H. BARENDT read a note on the Antiquity of Syphilis.

Dr. ISAAC HARRIS read a paper on the

Value of the Electro-cardiograph in Diagnosis and Prognosis.

Whilst the electro-cardiograph had its limitations, there were, he said, a great number of affections of the myocardium which could only be diagnosed by means of it. The practical significance was indicated of an inverted T in the second lead, of abnormal Q.R.S. complexes and other cardiographic aberrations. A case of auricular fibrillation complicated by degeneration of the heart muscle was given as an illustration of the value of electro-cardiography as guide in treatment. Digitalis was to be avoided in such a case which could not be diagnosed without the cardiograph. In regard to the Adams-Stokes syndrome, Dr. Harris pointed out that in his experience heart-block, partial or complete, uncomplicated by degeneration of heart muscle, never gave rise to the syndrome, while whenever it appeared degeneration of the muscle was found. Hence Mackenzie's contention that the syndrome was due to a sudden transition from normal to ventricular rhythm was considered untenable. The prognosis of these cases was, as a matter of fact, much worse than that of ordinary block.

Dr. JOHN HAY said that it was essential to understand what an electro-cardiogram represented. It gave in graphic form the variation in electric potential associated with each systole of the heart and nothing more. If for any cause any portion of the heart beats abnormally there was a change in the curve. Fibrillation, flutter, extrasystoles, heart-block, relative hypertrophy of either ventricle all presented their characteristic electro-cardiogram because some portion of the heart was contracting in an abnormal manner. A recognition of these variations made diagnosis certain, and brought some accuracy into prognosis. Variations in the ventricular complex were significant of myocardial damage—i.e., arborisation-block. Data were being collected of patients presenting bizarre forms of Q.R.S. complex. At the Royal Infirmary cases of auricular fibrillation in which this unusual form of electro-cardiogram was present were being observed in regard to the course of the disease. In patients suffering from fibrillation there was a small percentage in whom ectopic beats occurred; the prognostic import of this abnormality was not yet settled, though it was considered to indicate a serious outlook.

Mr. FRANK JEANS read a note on the Uses and Limitations of the Cystoscope, with special reference to conditions in which the cystoscope was the sole method of diagnosis.

Mr. G. P. NEWBOLT described a case of Cyst of the Brain occurring in a youth aged 17.

Correction.—In a report of a paper read by Dr. Jane Walker before the London Association of the Medical Women's Federation on Tuberculosis in Children of School Age, which appeared in THE LANCET of April 23rd (p. 862), the following sentence occurs: "From 1914 to 1919 at the East Anglian Sanatorium 62 per cent. of the 807 children had T.B. in the sputum and of these 56·4 per cent. died." This should read: "From 1914 to 1919 at the East Anglian Sanatorium *68, or 8·4 per cent.*, had T.B. in the sputum and of these 35, or 56·4 per cent., died."

THE SOUTHERN UNIVERSITIES OF IRELAND AND THE ELECTIONS.—Our Dublin Correspondent writes: "It is symptomatic of the lack of interest shown by the Irish public in the elections to the Southern Ireland Parliament that, writing only a few days before the nominations, one cannot discern with any certainty what candidates are likely to present themselves in the two university constituencies. Dublin University and the National University are each entitled to elect four members. In regard to the former, three or four names have been mentioned in the press, of whom some at least could hardly be regarded as serious candidates if the election were a serious affair. Among them no medical name occurs, nor have I heard of any medical man contemplating candidature. In the National University it is understood that Professor John McNeill, the present member for the University, will be a candidate, but it is not known who his colleagues will be, or whether there will be a contest. The likelihood of a contest is much diminished by the decision of Mr. Dillon not to encourage Nationalists to seek election at present, but there may be some independent candidates."

Reviews and Notices of Books.

DISEASES OF THE SKIN.

By J. M. H. MACLEOD, M.D., F.R.C.P. London: H. K. Lewis and Co., Ltd. 1920. Pp. 1307. £3 10*s*.

Dr. MacLeod has dedicated his book to his colleagues in dermatology, and the appreciation with which it will surely be received by them should compensate him for the infinite pains he has bestowed upon it. We think it may rank among the most authoritative text-books of dermatology that has yet appeared in the English language; it is certainly the most readable English modern work. It is unlikely that the charm and the vivid word-pictures which characterise Darier's "Précis de Dermatologie" will ever be reproduced; this stands alone and hardly admits of comparison. But Dr. MacLeod's book resembles the Précis in this respect—while his descriptions are admirably succinct, they are not written in the text-book style which makes consecutive reading almost an impossibility. The author admits that he has been compelled to omit a good deal of the historical side of the subject, and to restrict the bibliographies; at the same time he has given us an excellent short account of the history of leprosy. The bibliographies, if not complete, are at any rate very useful, and, as a rule, the most important references to the literature of the various diseases are given. Curiously enough, soft sore is not dealt with except in the discussion on the diagnosis of genital chancres, but this is not a very serious omission.

No text-book can be quite up to date, but this volume can be little criticised in this respect. A few important sections might have been modernised. For example, in that dealing with oriental sore the treatment is said to be "unsatisfactory," and, while Low's method of applying an ointment of tartar emetic is given, administration of antimony by intravenous injection is not mentioned, although Ferra, of Brazil, used this method successfully several years ago. Again, in the description of xanthoma, which is included in the chapter on "Pseudo-neoplasms of the Skin," no reference is made to the work of Pinkus and Pick, and of Chauffard and his assistants on cholesterinæmia, nor is the fact mentioned that in xanthoma multiplex, at any rate, the amount of cholesterin in the blood is greatly in excess. Describing herpes zoster, Dr. MacLeod says: "Should suppuration occur, the neighbouring lymphatic glands generally become enlarged—a feature which has been noted even in cases in which the lesions were uncontaminated by pyogenic micro-organisms;" and Dr. Henry Head, in a classical article on zoster, states that "in most cases the contents of the clear vesicles become turbid. Possibly it is in connection with this pus formation that the lymphatic glands that drain the affected tract of skin are in the majority of cases enlarged." It is curious that these two accurate observers should apparently not have noticed that the adenitis associated with herpes is such an early symptom that it certainly sometimes, if not always, precedes the appearance of the eruption.

We are surprised, too, to find in the section on pruritus ani that Murray's view that the actual pruritus is due to infection of the skin with the *Streptococcus fæcalis* whereas local disorders of the rectum, threadworms, &c., are only predisposing factors, is summarily dismissed as untenable, and treatment by vaccines as unreasonable. Bassler entirely supports Murray's work, and considers that autogenous vaccine treatment is the most valuable method in cases in which the pruritus persists after any local abnormality has been corrected by operation or otherwise, and, according to him, failure with vaccines is usually due to ignorance of the technique and of the dosage required. The last chapter is devoted to tropical diseases of the skin, upon which the author is a recognised authority, and it is to be noted that, in discussing the ætiology of pellagra, he seems rather to favour the views of Sambon, which, in the light of Boyd's work among Turkish prisoners of

war, to which no reference is given, and of the observations of American workers on the subject, can hardly now be seriously considered.

But, in criticising such minor points as these, we do but emphasise the general excellence of Dr. MacLeod's work; his clinical and histological descriptions are clear, his discussions of the ætiology of diseases of doubtful causation are eminently fair, and the sections on treatment are unusually detailed and helpful. We were particularly impressed by the sections on syphilis and leprosy. The illustrations have been carefully selected, and are almost uniformly good, and we gather that the publishers have spared no pains to assist Dr. MacLeod in the great task which he has so successfully accomplished.

FEEBLENESS OF GROWTH AND CONGENITAL DWARFISM.

By MURK JANSEN, O.B.E. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 82. 12*s.* 6*d.*

Dr. Murk Jansen's writings are suggestive, even when we do not quite see our way to full agreement In this book he has endeavoured to show the causative relations between several conditions, many of them ill-defined, and all of them obscure, and to link these together as examples of the injurious effects of noxious influences acting on the growing body under different circumstances and at different periods. In the first part, dealing with "feebleness of growth," the author points out that this result may follow from any injurious agent acting on the developing body, and that it is proportional, not only to the intensity of this agent, but to the rapidity of growth both of the individual and of his various parts. Dealing mainly with the skeleton, he goes into physiological details of bone formation, and shows how these functions may be affected. We do not think that there will be serious objection to the general "laws" which Dr. Jansen has laid down to explain the affections with which he is dealing, and which enable him to bring them together as a series in harmonious conjunction. The few paragraphs devoted to growth feebleness in the soft parts might prove of suggestive value to clinicians other than the orthopædic surgeon.

In the second part of this short treatise (Congenital Dwarfism), however, we must join issue with the author on some of his suppositions. We have no desire to lay stress on what are probably inaccurate dates in organogeny, for these are easily adjusted, but we cannot help feeling that the author is mistaken in his views when he refers the physical abnormalities in achondroplasia, anencephaly, &c., to the mechanical action of an imaginary small amnion. The amnion has always been liable to indictment for all sorts of offences, and amniotic bands are a regular refuge for many ætiologists in their search for causes. It cannot be denied that such bands occur, but they are rare, and any connexion with deformities has not, we believe, yet been shown. In many cases an "amniotic band" is credited with an effect it could not possibly produce, even if it were present, and the presence of an efficient cause of both the band and the abnormal development, such as uterine disease, is overlooked. Dr. Jansen, however, does not depend on such accessory structures in his ætiological conceptions, but postulates a shortness or want of growth of the amnion, probably only temporary in nature, to account for the interference with nutrition which he recognises in his cases. We do not believe that any practical human embryologist would admit for a moment that the embryonic amnion with which he is acquainted could, under any circumstances, oppose a barrier to the growing power of the embryo, or interfere with its blood-supply, in the way imagined by Dr. Jansen. It may be pointed out that one of the commonest and earliest signs of a pathological ovum or embryo is enlargement of the amniotic sac, and diminution in its size has not, so far as we know, been recorded. On the other hand, although it may not bear directly on the question, it is of interest to recall that in some of the lower vertebrates, the embryos develop under the pressure of a thick resistant zona, so that they are flattened out and deformed by being pressed down to one side; yet when the membrane gives way they are found unaffected and pursue their course, straight, but otherwise as before. We do not see the necessity for the postulate. Surely the noxious agents which can be held responsible for upsetting normal nutrition may be thought potent enough to cause local emphasis, if periodicity is granted, without calling in the aid of probably impossible factors.

Dr. Jansen works in his theories most ingeniously with the facts, but, as we consider that the explanations are based on a wrong assumption, we cannot allow our admiration to alter our belief that the embryological evidence is against him. Nevertheless, we have no hesitation in recommending all those who are interested in thoughtful contributions to the pathology of deformities to read this book. When they have finished it they will probably have a better grasp of the subject-matter of the work, whatever views they may hold about the cast-iron potentialities of the amnion.

RADIOGRAPHIC TECHNIQUE.

By T. THORNE BAKER, A.M.I.E.E. London: Constable and Co., Ltd. 1921. Pp. 196. 15*s.*

THIS is a small volume devoted almost entirely to the photographic side of radiography, and is evidently written by one who is thoroughly conversant with all the necessary photographic processes that go to make the perfect radiograph. The author's assertion that the photographic knowledge of many operators is lamentably deficient is probably true, and it is to meet this difficulty that the present volume is written. A preliminary chapter is given on the installation itself, to aid the user to locate faults, but the main object is to explain and instruct the operator in carrying out the dark-room processes, the proper management of intensifier screens, and such other details as help to make a radiograph pleasing to the eye as well as valuable in diagnosis. The two concluding chapters deal with industrial applications of radiography, which open up a new field to this branch of science.

MANSON'S TROPICAL DISEASES.

Seventh edition. Edited by PHILIP H. MANSON-BAHR, D.S.O., M.D. Camb., M.R.C.P. Lond. London: Cassell and Co. 1921. Pp. 960. 31*s.* 6*d.*

THE publication of the seventh edition of "Manson's Tropical Diseases," under the editorship of Dr. P. Manson-Bahr, provides a most comprehensive and up-to-date study of the vast field of tropical medicine. The subject-matter of the new edition is divided into eight sections and three appendices. Section I. embraces the wide range of tropical fevers and occupies approximately one-third of the whole volume.

The subject of malaria is elaborately dealt with. The whole question of quinine treatment and of the methods of administration is placed before the reader in a convincing and unbiassed manner. Due weight is given to quinine prophylaxis, but the importance attached thereto previous to the war appears to have been excessive. Certain points connected with the epidemiology and endemiology of malaria are emphasised as requiring further elucidation and explanation, in particular "the exemption of certain islands from malaria, even though in the midst of an archipelago of malaria-haunted islands"; also the existence of malaria-free districts surrounded by highly malarious country and abounding in Anophelinæ. It is suggested that hyper-parasitism or the destruction of the plasmodium by some other kind of parasite, such as the "black spores" described by Ross, may account for such anomalies. A lucid and interesting account is given of blackwater fever, the ætiology of which must still be regarded as unsettled. New work on trypanosomiasis is included. The question of the identity of *T. rhodesiense* and *T. brucei* is still much in dispute, as also is the question of the harbourage of *T. rhodesiense* by big game. This point is important as it has been raised in connexion with the desirability of game extermination, as a means of prophylaxis in addition to

the clearing of areas infested by *Glossina palpalis* and *morsitans* in the regions respectively affected by *T. gambiense* and *T. rhodesiense*. It is curious that antimony tartrate and atoxyl, though advocated in the treatment of *T. gambiense* infections, are relatively powerless against *T. rhodesiense*. The forms of leishmaniasis, kala-azar, oriental sore, and *L. americana* are fully described with coloured drawings of the parasites concerned. Remarkable results appear to have followed the adoption of intravenous antimony tartrate treatment.

In connexion with yellow fever the recent work of Noguchi and the discovery of the leptospira conveyed by *Stegomyia fasciata* promises to prove of the highest importance. Recent researches into Rocky Mountain fever and typhus fever—in the case of the former by Ricketts, and the latter by Arkwright, Bacot, and others—are described, and lend much hope to the discovery of the real causes. In Rocky Mountain or spotted fever the so-called Rickettsia bodies are the supposed virus of the disease, conveyed by and found in the tick *Dermacentor venustus*. In typhus fever and trench fever similar bodies are met with; and termed *Rickettsia prowazekii* they are found in lice infected with typhus blood. A full account is given of relapsing fever. The chief transmitting agent of the North African and European forms of the disease, from the most recent evidence, is in all probability the louse (*Pediculus humanus*), whereas in Central Africa and Persia the ticks *Ornithodorus moubata* and *Argas persicus* are concerned as carriers. Considerable space is devoted to the subjects of plague, Malta fever, and the enteric group of fevers. The Marris atropine test receives a full description, and is noted as "the most important contribution made during the war to the diagnosis of enteric fevers." Section I. concludes with a valuable summary of the diagnosis of fevers in the tropics.

Under Section II. are included "General Diseases of Undetermined Nature"—i.e., beri-beri, epidemic dropsy (war œdema), pellagra, and scurvy in the tropics. The food-deficiency and other ætiological theories are fully discussed. Under Section III. are described Abdominal Diseases. A graphic account of cholera and its treatment by Rogers's intravenous injection of hypertonic saline solution combined with injections of atropine, and also by Cox's method of slow intravenous injections of isotonic saline fluid is given. The dysenteries, both bacillary and amœbic, are considered in a full and admirable account. Under Section IV. are described the infective granulomatous diseases, including, in particular, leprosy and yaws, both of which are graphically dealt with. In the treatment of leprosy prominence is given to the value of chaulmoogra oil, of the gynocardate and morrhuate of soda advocated by Rogers and Muir, while the more recent soya bean oil, which is still on trial, is noticed. Section V. includes the important group of animal parasites and associated diseases. In the treatment of schistosome infestations the value of intravenous injections of tartar emetic is mentioned as having been placed on a sound basis by Christopherson. The important subject of filariasis is even more comprehensively dealt with than in the previous edition. The succeeding chapters of the helminthological section deal fully with fluke parasites of the lung and liver in paragonimiasis and clonorchiasis and the many forms of infection by intestinal parasites, in particular ankylostomiasis. Section VI. is devoted to diseases due to poisons, including the various forms of snake-bite, and an account is given of the vomiting sickness of Jamaica, the cause of which, long obscure, has been clearly determined by the able work of Harold Scott to be due to ackee poisoning. In the two concluding sections are described tropical skin diseases and local diseases of uncertain nature, such as craw-craw, chappa, climatic bubo, goundou, and ainhum.

The value of the new edition is much enhanced by the important and practical information contained in the three appendices occupying the last 200 pages under the headings of Medical Protozoology, largely the work of Dobell; Medical Helminthology, Entomology, &c., and a very complete account of laboratory methods as applied to clinical medicine in the tropics. The last will undoubtedly prove of the greatest use not only to those engaged in practice in the tropics and in the Colonial Medical Service, but also to the student of tropical medicine at home.

The outstanding merits of this edition, retaining, as it does, the lucidity of expression and charm of style of previous editions, will ensure it a large circle of readers both at home and in the tropics. The type and general arrangement of the various subjects are excellent, and the numerous coloured plates are beautifully executed.

AIDS TO DENTAL SURGERY.

Third Edition. By DOUGLAS GABELL. London: Baillière, Tindall, and Cox. 1921. Pp. 132. 3*s*. 6*d*.

THE student will find this little book of some value if he will use it as an aid to revising his work and not rely upon it for the purpose of cramming for examination. The author might have added to the usefulness of the book by bringing it thoroughly up to date and extending certain sections—for example, that dealing with the relation of dental sepsis to other pathological problems. In the introduction attention is directed to the necessity of ascertaining all the facts of a case by systematic examination, and a clear account is given of the way in which this examination should be conducted. There is a useful section on the hygiene and care of the teeth and mouth. Hæmophilia is not mentioned—probably an oversight.

AN ATLAS OF NORMAL LABOUR.

With an Appendix showing Sylvester's and Schultze's Methods of Artificial Respiration. By G. DRUMMOND ROBINSON, M.D., B.S. Lond., F.R.C.P., Obstetric Physician to the Westminster and West London Hospitals. London: William Heinemann, Ltd. 1921. Pp. 104. 25*s*.

THIS Atlas consists of a number of photographs made from kinematograph films demonstrating the processes of normal labour in the living subject, and from drawings which the author had prepared for teaching purposes. It is obvious that it is only possible to employ the kinematograph to a very limited extent in showing the various processes of parturition, and that such photographs can only be obtained of the latter part of the second stage and of some part of the third stage of labour. The great majority of the plates, therefore, represent photographs of drawings of what the author, no doubt quite correctly, conceives to be taking place during labour. The actual kinematographic photographs of the stages of labour which it is possible to represent in this way are very interesting and valuable, but the question must arise as to whether the results are worth the trouble and expense entailed. Nothing can be photographed in a case of labour which cannot be equally well seen, and observation at the bedside must always be much more valuable than any series of drawings or photographs. The Atlas is, however, an interesting production, obviously compiled only at the expense of much care and trouble.

THE EXTRA PHARMACOPŒIA.

Sixteenth edition. Vol. II. By W. H. MARTINDALE, Ph.D., and W. WYNN WESTCOTT, M.B., D.P.H. London: H. K. Lewis and Co. 1921. Pp. 688. 17*s*. 6*d*.

THE second volume of Martindale and Westcott follows rapidly on the first; it has grown largely in bulk and usefulness since the last edition five years ago. The scope of the volume is difficult to express in a few words. Primarily it consists of analytical addenda to the materia medica described in the first volume. These are almost indispensable to anyone who dispenses his own physic, but they should be appreciated, too, by all who desire to prescribe quickly, pleasantly, and effectively. A knowledge of the manners and habits of drugs greatly enhances the range of intelligent medicamentation. In this section appear in

the present edition interesting notes on aspirin, cinchona, and digitalis. Around this primary nucleus has grown up layer by layer a number of sections on animal organotherapy, on physiological methods of assay, on radio-active substances, and on the antiseptic power of disinfectants. The information may be available elsewhere but only by stress and toil; here it is accessible, precise, and properly documented. Notes on the analysis of water, milk, butter, and the like, make the book welcome in any laboratory, large or small. Bacteriological and clinical notes on special diseases appeal to practitioners of medicine whose information on, say, leprosy or leishmaniasis is not quite recent and methodical. There is a large but not quite exhaustive list of proprietary medicines and a glossary of foreign words used in pharmacy, which contains the only piece of careless proof-reading in the whole work. An index is now added to include both volumes of the Extra Pharmacopœia. It is not easy to commend this book to anyone unacquainted with it without appearing to exaggerate. Martindale and Westcott picks up many of the fringes of medicine and makes them neat and tidy. Lacking it, the practitioner can hardly feel professionally quite well-groomed. The price has risen from 7*s.* to 17*s.* 6*d.*, but value is offered for the extra half-guinea.

JOURNALS.

Journal of Laryngology and Otology. March and April, 1921. Vol. XXXVI., Nos. 3 and 4.—In the March number Professor Ross Hall Skillern, of Philadelphia, discusses the operative treatment of ethmoidal suppuration. He finds that patients are frequently made worse by indiscriminate ablation of ethmoidal cells, and that in most cases the best results are to be obtained by preliminary removal of the middle turbinal, and then, after healing has occurred, by carefully following the pus to its source; good stereoscopic skiagraphs are of material assistance.—Mr. James Harper describes a method of partial thyroidectomy by which the gland is shelled out of its capsule with the finger; he claims that there is no shock nor risk of post-operative hæmorrhage or of injury to the recurrent nerve, and that it is never necessary to ligature an artery.—Mr. Andrew Campbell describes Bezold's method of treating chronic suppuration of the middle ear by intratympanic syringing, inflation, drying, and the insufflation of boric acid.——The April number contains a description of four cases of thrombosis of the cavernous sinus, by Dr. Ritchie Rodger.—Mr. Layton reports a death after tonsillectomy in a man aged 32 years; he had had the fauces anæsthetised two and a half hours before by injection of novocaine and adrenalin, and the pillars were sutured at the close of the operation on account of persistent oozing, but bleeding recurred and was finally arrested about 11 P.M., and the patient died at 4.30 on the following morning; it is doubtful whether death was due entirely to hæmorrhage as there was some post-mortem evidence of pulmonary embolism.—Dr. J. N. Roy, of Montreal, describes the successful removal by œsophagotomy of a foreign body which had remained in the gullet for nearly 14 months.—Mr. W. M. Mollison contributes a study of the tonsil as a focus of infection in chronic arthritis.

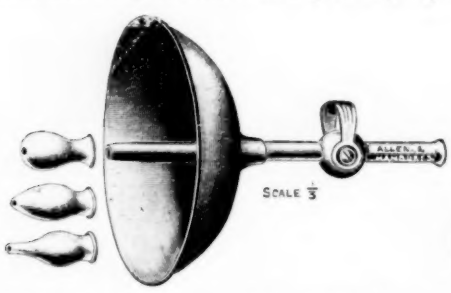
Archives of Radiology and Electrology (January, February, and March).—Recent issues present many subjects of interest. In the January number Dr. A. E. Barclay points out a danger attending the use of the Coolidge tube for screen examinations, while some studies in gastro-intestinal diagnosis are contributed by Dr. R. Knox.—Sir James Cantlie describes an X ray motor ambulance for use at home and in tropical countries that is likely to be of great value. The question of pastilles and their colour measurement is dealt with by Messrs. Donnithorne and Baker, and emphasises the conditions in which these should be used if reliable results are to be obtained.——In the February number Dr. Gosta Forssell, of Stockholm, contributes a valuable paper on the Differential Diagnosis of Tuberculosis in Bones and Joints, which is admirably illustrated with a series of splendid radiographs.—A sketch of the History of Electrotherapy by Dr. Hector A. Colwell is evidence of much painstaking research, and is accompanied by many illustrations of persons, appliances, and methods that have made the history of this interesting subject.——Dr. Forssell's paper on Tuberculosis is continued in the March number, and Dr. J. Neil Leitch refers to some uses of the infrequently interrupted faradic current, which seems to have a special value in cases of incontinence.—The principle of the Bucky Diaphragm for radiography of the thicker parts of the body is described by Dr. H. E. Potter.—The usual sections are devoted to reviews, notes, and abstracts.

New Inventions.

URETHRO-VESICAL MEDICATION.

(1) *An Improved Irrigator Handle.*

THE advantage of the irrigator handle herewith illustrated is that by means of a special stopcock inserted in the stem the flow can be regulated from a drop to a force sufficient to allow the fluid to enter the bladder, only one hand being required for this manipulation. It thus does away with the necessity for any clip upon the

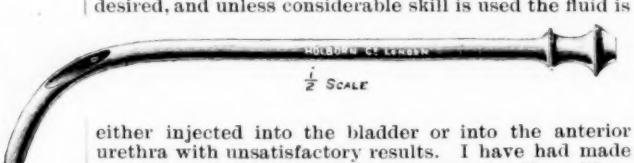


rubber tubing. A dome 4½ in. in diameter, sufficient to protect from splashing, is soldered on to the stem at a distance from the rubber tubing, to permit of the instrument being supported on the palm of the hand and the flow controlled by compressing the rubber tubing between the thumb and index finger, as some operators desire, yet the stream can immediately be shut off by closing the stopcock with the thumb of the same hand. The stem projects from the dome a distance sufficient to give a good view to the operator when the nozzle is inserted. The nozzles, metal or rubber, are made in three sizes to suit a small, medium, or large meatus. They block the meatus but do not enter the urethra. They are easily sterilised and extremely durable.

The handle is made by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W.

(2) *A New Syringe for the Treatment of the Posterior Urethra.*

In the treatment of chronic posterior urethritis or the sexual neuroses one often wishes to instil a medicament into the posterior urethra, and Ultzmann's syringe is used for that purpose. All operators are aware of the difficulty of localising the instillation to the spot desired, and unless considerable skill is used the fluid is



either injected into the bladder or into the anterior urethra with unsatisfactory results. I have had made a solid ended catheter, 8 inches in length, with a universal holder to fit an ordinary 20-minim record syringe. Down the centre of the instrument passes a fine bore which opens into a hollow notch, 1 inch in length, placed on the convex side of the catheter curve. When the instrument is in situ the verumontanum projects into this concavity and so can be treated; on slightly withdrawing the instrument the remainder of the posterior urethra can be dealt with.

The instrument is made by the Holborn Surgical Instrument Co., Ltd., Thavies Inn, London, E.C.

Harley-street, W. M. W. BROWDY, M.B., Ch.B.

THE LANCET.

LONDON: SATURDAY, MAY 14, 1921.

The Teeth of the Nation.

THE Dentists Bill was introduced by Sir ALFRED MOND on Thursday, May 5th, and read for the first time. Although it is a mere truism to say that to have sound teeth is one of the conditions of good health, few of the public, we imagine, realise how accurately the quality of the teeth is an index of the soundness of general hygienic upbringing, and how badly, judged by this criterion, the British nation would emerge from the ordeal. It cannot be claimed in mitigation that we have been kept in ignorance of this alarming state of affairs, for has not Sir GEORGE NEWMAN repeatedly warned us in his illuminating reports to the Board of Education, and with all the weight and authority of statistical evidence out of the mouths of some 8,000,000 school children? And did not the medical examination of recruits for our recent armies also prove beyond any possible question that as far as the teeth are concerned we are a sick nation? The Ministry of Health undoubtedly realises its responsibilities in this regard. And this is well, for in no department of medicine is quackery more rife than in that which is concerned with the care of the teeth. But the problem of the prevention of dental caries will not be solved by setting up a State Board of Dentistry or by the maintenance of a register, be the latter never so carefully kept. Both these innovations will help in setting our house in order, but public coöperation is needed.

With the best will in the world, and without considerations of expense, the care of the nation's teeth is a large task. There are not enough dentists in the United Kingdom to repair all the damage which has been inflicted by neglect, so that the interests of the public will certainly not be served by any drastic measures which deprive a large section of the practising dentists of their chance to pursue their calling. The views of the Dentists' Committee and of the British Dental Association on the rights of various practitioners to be included in the registry, should the new Bill be placed on the statutes, will be heard with respect. But these bodies must inspire the sense of Parliament to protect the public from fraudulent practice—that must be the main objective. Good teeth do not depend solely on the skill of the dental practitioner; his services are mainly essential to make amends for failure in prophylaxis. Well-made and well-mineralised teeth should not stand in need of the benefit of dentistry, at any rate until after middle age. What we want to know is what are the conditions on which the development of healthy teeth depend. We are just beginning to understand some of the essential factors on which nutrition is based, and sound general nutrition is one, perhaps it is the chief, condition on which the development of good teeth depends. We recognise, indeed, that in the main the problem is one of dietetics, not only in the child during the whole of the time the teeth are forming in the jaws, but also in the mother before the child is born. While not accepting without reservation the theory of the school which explains both carious teeth and the larger problem of rickets on the grounds of vitamin starvation, it must be admitted that deprivation of accessory food factors seems established as one of the causes which lead to malnutrition and defective teeth. It would be fatal to allow an attractive theory to obscure the clearness of our judgment, or to tempt us to stake too much on a speculative hypothesis. The problem of rickets or that of carious teeth is not going to be solved by the distribution of cod-liver oil, the prevention of food adulteration, or a drop in food prices. We must promote the development of good teeth in the light of knowledge we already possess. The difficulty is to disseminate this information sufficiently widely in the quarters where ignorance prevails.

Much can be done by attending not only to the diet but also the general hygienic management of the mother during pregnancy and of the child after. Breast-feeding is clearly of first-rate importance, while, after weaning, the diet must be adjusted to physiological requirements as regards quantity no less than quality, and as regards general balance no less than as regards the special balance of the constituents. The development of the jaws by adequate mastication appears no less valuable than nose-breathing, while the toilet of the nose is just as necessary as the hygiene of the mouth. Among indirect causes of dental caries must be included general infection, such as measles, unhealthy tonsils, and oral sepsis, all of which tend to produce either a condition of general acidosis or some local condition of acidity which demineralises the teeth. Well-formed and well-mineralised teeth are not easily affected by passing conditions of acidity, either of the mouth or of the tissue juices; but when acidity is chronic or long-continued the teeth are liable to suffer, especially if badly made. Enlightened public opinion and the spread of knowledge are the only reliable prophylactics against risks arising from so many sources. It would be disastrous to rely only on skilled and registered dentistry to save us from the Nemesis of mismanaged infancy, and every scientific dentist knows this to be so. Welfare centres, health visitors, and our national societies for the prevention of infant mortality have done, and are doing, stalwart service in instructing the mothers of the rising generation in some of the elementary laws of dental prophylaxis. Much, however, still remains to be done. The Dentists Bill may be felt to press hardly on the present registered constituency, who have all our sympathies; but inasmuch as it eliminates quackery it will promote public effort.

Aphasia.

THE study of thought and speech presents an interesting example of the manner in which knowledge grows. Different investigators approaching a problem along different routes observe facts, devise terminologies, and evolve theories to explain the phenomena. These researches appear for some time to have no tangible connexion or relation with one another until a bridge builder appears who tries to throw an arch from one to the other. Under the new stress a buttress of carefully fashioned theory may collapse and require

rebuilding in the light of the newly won experience, or the whole may stand and the world be in possession of a new, illuminating conception. For 2000 years philosophers have reasoned about the phenomena of thought and speech: analysis and introspection yielded various explanations of the relationship between mind and body. Then came the period of the experimental method; on the one hand the phenomena of mind were studied by the psychologists, and on the other the anatomists and physiologists began building up a sure knowledge of the organ of mind. Medical men being necessarily observers of what amount to destructive experimental lesions carried out by Nature, it is natural that bridge-builders should be found working in their ranks.

Dr. HENRY HEAD, in his recent papers,[1] has reopened the whole question of aphasia. He traces the modern development of our knowledge from GALL, with his six varieties of memory located in the frontal lobes, to the schematic explanations of CHARLTON BASTIAN and WERNICKE and the attempt to make theory fit facts more closely, which was made by MARIE. Dr. HEAD has devised a new method of examination of the aphasic, based upon the principle that the patient's power of response must be tested by a series of observations in which the same task occurs on two or more occasions. He claims that the observations made indicate that disorders in the use of language cannot be classed under the category of isolated affections of speaking, reading, or writing, nor can they be explained as due to the destruction of visual, auditory, or motor images. What is affected is essentially the ability to grasp the significance of symbols of all kinds, the power of "symbolic thinking and expression," so that even in "motor" aphasia, not only external speech, but certain aspects of internal speech are affected. As a result of lesions in different parts of the brain this power becomes dissociated in a manner analogous to the effect produced on sensation by lesions of the cerebral cortex; and Dr. HEAD distinguishes four main varieties of dissociation resulting in verbal, nominal, syntactical, and semantic aphasia. In verbal and syntactical aphasia it is the idea of the structure of the word which principally suffers both in external and internal speech; there is a defective conception of the structure and the rhythmic balance of the symbol. In nominal and semantic aphasia the ultimate significance, the full range of association, of the word is impaired or lost, so that the word cannot be used perfectly as a language symbol. He maintains that we have been led astray by BASTIAN and others, who based their work upon the theory that we think in words, while his results substantiate the teaching of HUGHLINGS JACKSON that it is the power to form propositions which is affected, and the more nearly a symbolic action approximates to a proposition the greater the difficulty it presents. A priori terms, such as "motor" or "sensory" aphasia, "alexia," and "agraphia" do not correspond to any actual discoverable functional categories; they should be abandoned, as should be all attempts to find any localisation for them in the brain.

At present Dr. HEAD has not indicated any localisation of the lesions producing his four varieties, and he modestly states that his results "are of no direct practical value to the physician"; but it has long been clear that our theories, based upon hypothetical "centres" for memories of images have been inadequate to explain the actual symptomatology of any patient, and destructive criticism based upon experimental evidence in conjunction with a new classification, running across the lines of the older theories, constitutes an important step. It means that we are enabled to study our patients from a new angle. If experience of his methods in other hands leads to confirmation of his results, and still more if he discovers to us a localisation corresponding to the new varieties of aphasia, Dr. HEAD will have placed a valuable diagnostic weapon in our hands. Until then we must rely upon the older methods which, although possibly based upon an incorrect psychological foundation, have nevertheless many clinical successes to their credit.

[1] Disorders of Symbolic Thinking and Expression, British Journal of Psychology (General Section), vol. xi., Part II. Aphasia and Kindred Disorders of Speech, Brain, vol. xliii., Part II. Aphasia: An Historical Review, Brain, vol. xliii., Part IV.

Sterility and Abortion.

IN his Sir John Struthers lecture[1] Professor ARTHUR ROBINSON offers a serious challenge to the current belief that sterility and prenatal death, and abortion resulting therefrom, are due to disease or abnormal environment of either parent. Defining prenatal death as the death of ripe extruded ova, or of the zygotes formed by the union of such ova with spermatozoa before the termination of the normal period of gestation, he proceeds to offer evidence that this is a frequent and regular occurrence in certain groups of healthy mammals under ordinary conditions. In order to prove whether the defect leading to death is germinal or parental in origin in any species, the ovum extrusion-rate and the actual birth-rate must first be ascertained in a satisfactory number of cases; the period, before or after fertilisation, at which prenatal death occurs—and if the latter, whether before or after the attachment of the zygote to the uterine mucosa—is also important. Professor ROBINSON'S investigations on horses and ferrets, two very different groups of mammals, provide much, though not all, the data.

The records of the matings of 390 Clydesdale stallions with 28,241 mares, and of 43 thoroughbred stallions with 3640 mares were placed at his disposal. The mare ovulates at every heat period, whether inseminated or not. Since none of the mares died or were killed, the ovaries and genital canals could not be examined, and in these respects the history is incomplete. The average prenatal mortality of the Clydesdales during a period of six years worked out at 48 per cent.; the thoroughbreds during five years gave a prenatal mortality of 58 per cent. Of the ferrets, 165 only were available, but since the ovum production-rate, as calculated by the number of corpora lutea present in the ovaries, amounted to 9·95 per animal at each breeding period, these could be regarded as representing over 1600 ova. Ferrets ovulate only after insemination, and, according to Professor ROBINSON, not till after the spermatozoa have entered the caudal third of the oviduct. Other anatomical characteristics of the ferret, as well as the conveniently small size of its ovary for purposes of serial section, make it

[1] Edinburgh Medical Journal, xxvi., Nos. 3 and 4, March and April, 1921.

an excelient subject for this investigation. The genital apparatus of 165 animals, killed at intervals after insemination varying from 18 hours to 42 days, the usual period of gestation, yielded a considerable amount of material for detailed microscopical examination, the results of which have been tabulated by Professor ROBINSON.

The prenatal death-rate of the extruded ova works out at 24·16 per cent., but since the animals were killed at various periods of gestation, and not at the end, the figure is not comparable with the horse figures. Professor ROBINSON suggests that some of the ova and zygotes which appeared normal in the first week or two of gestation would doubtless have shown signs of degeneration had the killing of the mothers been delayed. These and other considerations lead Professor ROBINSON to place the normal prenatal death-rate at not more than 39 per cent.; but, as he says, the exact percentage is unimportant. His main point is that in ferrets, as in horses, the prenatal death-rate in healthy animals in a normal environment is high and variable. In general support of the contention that this is probably true for other animals he adduces the observations of J. P. HILL on marsupials, of J. HAMMOND on swine, and of C. R. STOCKARD and G. N. PAPANICOLAOU on guinea-pigs, though he admits that the evidence is not conclusive.

Professor ROBINSON makes other interesting deductions, positive and negative, from his material. From breeding experiments alone, unless carried out on a very extensive scale, he considers that it would not be possible to say that any stallion, or probably any other male animal, was impotent. One thoroughbred stallion was infertile with 51 out of 52 mares with which he was mated, a second with 93 out of 103 mares, and one Clydesdale stallion with 96 out of 104 mares. The horse data give no help as to where, when, and how death takes place, but the evidence offered by the ferrets appears again to be confirmed by the work of HAMMOND on swine and rabbits, G. W. CORNER on swine, HILL on marsupials, and A. W. MEYER on intra-uterine absorption of ova, which show that the cause of prenatal death cannot in some cases be attributed to uterine disease. Professor ROBINSON finds that in ferrets extruded ova die in the peritoneal cavity, into which they have escaped; in the peri-ovarial sac, from which they have failed to escape into the oviduct; in the oviducts; and in the uterine cornua. They die when still ova, either lost in the peritoneal cavity or because they fail to unite with the spermatozoa present. As zygotes they die in the morula and in the blastula stage, after attachment to the decidua and after differentiation into embryo and appendages. The majority of the extruded ova become zygotes, and of these the majority which die in the prenatal period die after they have become attached to the decidua. *How* they die is more difficult to decide, but it is always apparently by an alteration of their structure, ending in disintegration. "The death is not due to inflammation or to micro-organismal attack, but apparently simply to an incapability to live and develop properly under conditions which are quite favourable to immediately adjacent zygotes."

After discussing and dismissing other possible factors, Professor ROBINSON concludes that the cause of prenatal death is the constitution of the gametes and zygotes, and further, that it is a structural peculiarity of the gametes which is the cause of sexual incompatibility. He goes still further. To him his material suggests that a large amount of the prenatal death which occurs in mammals is normal, that it is not dependent upon disease of the parents, detrimental environment, insufficient nutrition, or disease of the gametes, but is in a sense a side issue of the process which gives rise to the variations which appear so universally in all mammals and probably in all living beings. Again, if prenatal death is admitted to be constant and normal, Professor ROBINSON points out the obvious corollary that in some animals abortion also must be normal. In mammals which produce multiple young at birth, any dead zygotes are removed by absorption in all but the very latest stage, for obvious reasons. In animals which produce only one young after a long gestation period abortion immediately following death of the zygote, is an economical and necessary arrangement, as the uterine mucosa quickly regains a condition favourable to a new gestation. Thus the changes in the decidua usually regarded as degenerative, and as the possible cause of the death of the zygote may be the result thereof, and should in this case be regarded as regressive changes adapted to bring about as soon as possible a normal pro-œstral condition of the uterine mucosa. If Professor ROBINSON is right that a considerable number of abortions are not only normal but necessary, and adapted to prevent diminution of the birth-rate, his further contention that the condition of the uterine mucosa associated with them is not degenerative or diseased and that treatment directed thereto is unnecessary, if not detrimental, is justified. The discussion on sterility, its causation and treatment, reported in our present issue, would certainly appear to show that the practical clinical experience of obstetricians at least does not conflict with his experimental findings.

THE PROBLEM OF SLUM AREAS.

THE slum area of Brady-street, Bethnal Green, was the subject of a recent question in the House of Commons. The Minister of Health was asked whether the London County Council had presented to his Department a plan for dealing with the area, whether the plan had been approved or rejected, and when the Council had been informed of the decision. Sir ALFRED MOND replied to the effect that a local inquiry was held in June, 1920, into the scheme proposed by the London County Council; it was then found that adoption of the scheme involved a number of legal and administrative questions, of which settlement was necessary before a decision could be given upon the case in question. Action upon the scheme would in any case have to be deferred until further progress was made with provision of new houses. The numerous complications attendant, under existing conditions, upon any conveyancing of densely-populated property must inevitably tend to hamper the advancement of public health in this country; and it is made plain in the answer of the Minister of Health that even when slums have been acquired by local authorities for purposes of destruction, shortage of new houses still bars the way to demolition of property unfit for habitation. It may be true, as some would have us believe, that the slum-bred tenant speedily reduces any house he occupies to the level of his own personal squalor; but if any progress is to occur this fact constitutes no argument against the making of a steady effort to supply dwellings built and drained and lighted in such a way that the slum tenant may have at least the opportunity to prove the statement false.

Annotations.

"Ne quid nimis.'

X RAY AND INFLUENZA SCARES.

THE Parisian popular press has recently promulgated two "scares," one having reference to the "danger" of living near a laboratory or clinic where X rays are employed, the other being an allegation to the effect that the country is on the eve of another influenza epidemic. The latter is the more serious suggestion of the two. A few cases of influenza have been reported at the ports of Brest, Cherbourg, and Lorient, and also inland, amongst troops stationed at Orleans, Saint-Estienne, Bourges, and Albi. In Paris at the end of April there had been no demand at the Pasteur Institute for anti-influenza vaccine. Most of the military cases have occurred among recruits who have recently joined their regiments. The symptoms are not so severe as those noticed during the great epidemic of 1918. The Minister of Hygiene, Mr. Lerédu, has, however, ordered the strict disinfection of public halls, schools, restaurants, cafés, kinemas, and theatres. The public has also been advised to avoid sudden changes of temperature, to isolate the sick, to observe great personal cleanliness, and to indulge abundantly in hot drinks. This latter welcome piece of advice will, of course, result in a renewed outcry against profiteering in rum. Hope is still entertained, however, that there will be no epidemic, and that the few cases mentioned are due to the recent sudden changes in the weather.

The apprehension lest proximity to X ray centres of employment should affect health, though it affects very few people, has led to almost as lengthy a controversy. Mr. Contremoulins, who won the Montyon prize for medicine and surgery and is laureate of the Institut, has sent a report to the Academy of Sciences on experiments of his own which indicate that it may be dangerous to live in a building where X rays are constantly employed. Journalists have thereupon invaded the laboratories of many known authorities, have obtained interviews, and have written long articles about X rays. At the Saint-Antoine Hospital, however, Dr. Iser-Solomon refused to consider the matter in a tragic light. He pointed out that to affect the health of persons living in the neighbourhood the X rays would have to pass through the walls of the building; the solidity of the walls and the distance must be considered. At the Saint-Antoine Hospital three X ray apparatuses are at work every morning and nowhere else in France is there so considerable a production of X rays. A ward full of patients is separated from the X ray theatre by nothing but a light partition wall, and on the floor above there are more patients. Neither the patients in their wards nor photographic films, many of which have been kept for a year near the X rays, have been affected. In any case, what danger there may be can be overcome by the use of lead to cut off the rays. To this and similar arguments, Mr. Contremoulins replied that the patients at the Saint-Antoine Hospital leave when cured, and he was concerned with the employment of X rays near private dwellings and their effect in the course of years. It is therefore a question not only of distance and the thickness of walls, but also of time.

PAPILLARY EPITHELIOMA OF THE RENAL PELVIS.

Dr. Edwin M. Miller and Dr. Robert H. Herbst,[1] of Chicago, reporting a case under their care, remark that primary papillary epithelioma of the renal pelvis is a rare tumour, only 54 cases having been recorded in the world's literature. The tumour is twice as common in males as in females, nearly half the cases occur in subjects between the ages of 50 and 60, about one-fifth between 40 and 50, and the same number between 60 and 70. The oldest case was in a woman, aged 86, and the youngest in a boy. As regards the ætiology, although it is possible that irritation from a calculus or chronic infection may be a predisposing factor, infection is mentioned in but three and calculus in only 10 of the 54 cases. The tumours may vary in character from multiple, small, isolated growths to a single large cauliflower-like mass, filling the renal pelvis and producing destruction of the renal parenchyma. They usually arise from the lining of the pelvis of the kidney, but sometimes originate in the terminal portion of the collecting tubules. Their histological structure resembles that of papillomata elsewhere in the urinary tract. Bleeding occurs readily, and the clots formed may block the outlet of the pelvis with consequent hydronephrosis, or cause varying degrees of obstruction as they pass down the urinary tract. The tumour may remain localised in the kidney or involve the lower urinary tract either by direct extension or by implantation. Of the 54 cases, 25 showed involvement of the ureter, and in 18 the tumour invaded the kidney, ureter, and bladder. The symptoms vary considerably with the size of the tumour and the associated pathology. Hæmaturia is the most constant manifestation. It is usually intermittent and may vary from a slight cloudiness of the urine to a severe hæmorrhage. Pain is inconstant, and ranges in degree from mild bladder irritation to severe colicky pains like those caused by ureteral stone. The condition may last for years in the absence of surgical treatment, but in the great majority of cases a relatively early termination takes place. As regards the diagnosis, the possibility of this condition should always be considered when intermittent hæmaturia occurs in adults in association with pain in the kidney region. It should be strongly suspected if the skiagrams show no stone and there are colicky pains along the ureter, diminution or absence of function of the affected kidney, and a palpable tumour in the loin. The diagnosis is confirmed by cystoscopy revealing a papilloma in the bladder or ureteral orifice, by the presence of otherwise unexplained epithelial cells in the urine, and by the pyelogram showing defect in the renal pelvis. The nature of the treatment depends on whether the bladder is involved or not. In the former cases complete removal of the kidney and ureter, followed by fulguration of the bladder implantations, is required; in the latter cases removal of the affected kidney and ureter is indicated.

[1] Journal of the American Medical Association, April 2nd, 1921.

THE MEASUREMENT OF ACTIVITY AND FATIGUE.

EFFICIENCY in industrial work is closely connected with activity and fatigue, which in their turn depend upon muscular and nervous energy. Considerable attention has recently been paid to this side of efficiency, but one of the difficulties experienced has been to obtain a direct measure of activity. Investigators mistrusting the introduction of subjective influences into any test used have been relying to a great extent upon records of output, concerning which the operatives have no knowledge that they may be used for the purposes of investigation; but a tendency is showing itself to have recourse to ergometric methods as originally carried out by Mosso. Recently we drew attention to the use in South African gold mines of specially devised ergometers to throw light upon the influence exerted by atmospheric conditions upon efficiency. A further investigation has now come under notice reported upon from France by Dr. H. Dausset and Dr. Boigey.[1] These workers made use of a universal registering goniometer capable of recording graphically the weights used, the number of movements made, their extent, and the total kilogrammes of work done. The activity of the deltoid, the biceps, and the extensor muscles of the hand were investigated on a number of subjects.

The curves obtained showed first a plateau during which the amplitude of the movements was constant,

[1] "Sur l'utilité des Courbes de Fatigue pour le control de l'Entrainement en education Physique," by Drs. H. Dausset and Boigey Paris Médical, April 16th, 1921.

and then a decline during which the amplitude of each succeeding movement was less than that of its predecessor. So far the work simply corroborates that of Mosso. But a new point is introduced as the result of examining carefully a large number of curves. The observers found they could divide the curves into four main types: one in which the plateau was comparatively short followed by a long decline; a second in which the plateau was comparatively long followed by a short decline; a third with both plateau and decline short; and a fourth with a short plateau followed by an abrupt fall. The first two types may be obtained from similar amounts of work done. Thus 124 kilogrammeters of work was represented by a curve with 30 movements composing the plateau, and 115 in the decline which represented 58 per cent. of the work done. While another curve representing 114 kilogrammeters had 75 movements composing the plateau and only 28 in the decline, which represented 20 per cent. of the work done. Subjects who are described as strong and nervous (*au sens sportif du mot*) gave curves with short plateau and long decline. Strong and slightly nervous subjects gave curves with long plateau and short decline. The third type was found associated with an inferior amount of work done, and to be obtained from invalids and nervous subjects, while the fourth type represented asthenia and was obtained from feeble and slightly nervous persons.

The plateau is claimed to represent the period of activity before the onset of fatigue, and the decline the definite appearance of impaired nervous activity. The relation of one to the other is proposed as a measure of the capacity of the individual to resist fatigue. "This evaluation should lead to a precise classification of subjects according to their mode of resisting fatigue, the part played by the nervous and muscular elements being variable." The authors suggest that fatigue curves of this kind, taken at regular intervals, might provide a control during athletic training; "a control much more precise than the criteria actually in use. It should permit the physical exercises of patients to be graduated at will; by these means the amount of nervous exhaustion caused by excessive work, by violent exercise, or by overtraining could be valued." Great interest would attach to measurements made in this way on industrial workers, compared subsequently with records of output. In the absence of any direct test of fatigue we hope that attention will be given to following up the field of investigation opened out by this interesting research.

THE SPECIFICITY OF THE SYPHILITIC ORGANISM IN GENERAL PARALYSIS.

WHILE the debate on the biology of the *Treponema pallidum* in common syphilitic affections and general paralysis continues with undiminished vigour, a young and hitherto unknown Italian scientist, Dr. Sanguineti,[1] has brought to light in Paris a thesis of his which attempts some explanation of this problem and may be considered a new interpretation of the ætiological and clinical aspects of progressive paralysis. It is well known that Levaditi and Marie maintain that ordinary syphilis is due to a dermotropic treponema, while progressive paralysis is caused by a neurotropic treponema, and they back up their opinion with the following biological variations met with in both, viz.:—

(1) That the neurotropic treponema has a period of incubation much longer; (2) that in rabbits the dermotropic treponema when inoculated into the scrotum gives rise to a hard sore, whereas the neurotropic produces a diffuse papulo-squamous lesion; (3) that the neurotropic has a greater epithelial and perivascular affinity, while the dermatropic has an endovascular affinity and a marked sclerosing action; (4) that the lesion caused by the neurotropic in rabbits develops slowly and recovers spontaneously; and (5) that the animals rendered refractory to either virus are not so towards the other.

[1] La Riforma Medica, April 9th, 1921.

These conceptions receive some clinical confirmation, for no one who has had the opportunity of observing a large number of cases will deny the existence of two well-marked forms of syphilis, one developing with cutaneous mucous and grave visceral lesions, the other affecting slowly the nervous system. On the other hand, the unicists, led by Sicard, still hold that the evidence put forward by Levaditi and Marie is not completely proved as yet, since neurotropism might well be interpreted as a special attribute acquired by the treponema during its long sojourn in the nervous system, and similarly other biological peculiarities might well have been acquired by either virus during a series of years in the various tissues in which it was lodged. Now Sanguineti has made a study of a hundred general paralytics, inquiring especially into the condition of the consort and descendants, and hence the relationship with the two different forms of syphilis which he thus describes; a latent syphilis which after the primary infecting sore is free from specific manifestations, and a florid syphilis which gives rise to the well-known secondary symptomatology. (It will be gathered that what follows is the substance of Sanguineti's thesis.) In the first case the infection is due to a neurotropic treponema which from the commencement will fix itself in the brain; in the second case it is the generic treponema which is concerned and ordinary syphilis results. Neurotropic syphilis gives rise to a paralysis which may break out 10–15 years after infection, and at the onset reveals itself in phenomena of psychic and somatic exaltation, leads to late dementia, leaves intact for a long time the general physical condition, does not infect the consort, gives a negative Wassermann, and induces towards an offspring of irregular development but of marked precocity. The other, ordinary syphilis, causes, on the other hand, a general progressive paralysis with very different characteristics, in that it begins 2 to 3, or 25–30 years after infection, leads to rapid dementia with bodily and psychic depression, infects the consort, gives a positive Wassermann and induces towards an offspring late development, and signs of hereditary syphilis. The first variety constitutes 74 per cent. of all cases of progressive general paralysis, the second 22 per cent. Sanguineti, however, admits the existence of mixed forms (4 per cent.) in which elements of one or the other are found when the soil offered by the patient allows the treponema to fix itself early in the nervous system after having given rise to well-marked specific manifestations. From an anatomico-pathological aspect he has noticed that in the first variety the arteries remain soft and normal, so that the mental symptoms must be explained by the direct action of the neurotropic germs on the nerve cells, while in the second type the arteries are sclerotic, so that these phenomena are the result of vascular and nutritive changes. The treatment of both forms by specific methods is devoid of result—in the former by the impossibility of reintegration of the elements invaded by the treponema; in the second on account of the extent of the arterial disorganisation. He has hopes, however, of a future serological therapy not yet realisable.

"BOTULISM" FROM CHEESE.

IN the March number of the *Journal of Infectious Diseases*, published at Chicago, there is an interesting contribution on the subject of "Botulism from Cheese" by Miss Mary Nevin, of the Research Laboratories of the New York State Department of Health, giving some account of an outbreak of botulism which occurred in 1914, attributed to the eating of "home-made cottage cheese." Three persons who had eaten the cheese died, and samples were sent to the State Research Laboratories for examination. The nature of the fatal illness was not at first diagnosed, but ultimately it was recognised that the clinical picture in these patients corresponded with that described by Ostertag, van Emenengen, and others. The symptoms included paralysis of the muscles of deglutition, suffusion of the

face, ptosis, total dilatation and failure of the pupils to react to light, paralysis of the muscles of the throat, with difficulty of speech. The cheese was bacteriologically examined, and *B. botulinus* was isolated from the sample. Miss Nevin claims that this is the first time that this bacillus has been identified in cheese. The early investigators of botulism thought that the toxin was produced by the bacillus only in the presence of meat protein. Since then, however, it has been shown that the toxin has been produced in association with vegetable protein. It is, therefore, apparent that meat protein is not necessary to the growth and consequent production of toxin by *B. botulinus*, and that cheese can serve as a medium.

RUPTURE OF ANEURYSM OF THE SPLENIC ARTERY DURING PARACENTESIS ABDOMINIS.

Dr. J. Garland has recently reported[1] a very rare fatal complication of paracentesis abdominis. A man, aged 52 years, a granite polisher, was admitted to the Massachusetts General Hospital on August 6th, 1920, complaining of dyspnœa on exertion and œdema. There was a history of gonorrhœa at 29, but syphilis was denied. About four months ago his feet became swollen at night and he stopped work for a week. The abdomen was slightly distended. Although the swelling was not much reduced he returned to work, but after half a day's work the swelling greatly increased and he became dyspnœic and returned to bed. On examination he was well nourished and of a good colour. The left pupil was larger than the right, but both pupils reacted normally. There was a small right retinal hæmorrhage and a few fine râles were heard at the bases of the lungs. The cardiac impulse was in the fourth interspace 13 cm. to the left of the middle line. The action was slightly rapid and the aortic second sound was accentuated. There was a systolic murmur at the apex and a diastolic over the left fourth interspace at the sternal border. The pulses were equal and synchronous and of high volume and tension. The artery walls were palpable. The blood pressure was 210, systolic; 125, diastolic. The abdomen was distended and tympanitic with a definite fluid wave and shifting dullness. The scrotum and feet were œdematous and a fine tremor of arms and hands was present. The knee-jerks were normal. The temperature varied from 98° to 103° F. The urine contained a trace of albumin, white and red blood corpuscles, and rare granular casts. On two examinations occult blood was found in the stools. The Wassermann reaction was positive. Radiographic examination showed definite change in the heart shadow, especially to the left. Digipuratum was given and on August 16th paracentesis abdominis was performed; 5500 c.cm. of slightly cloudy, straw-coloured fluid were withdrawn. On the 19th the temperature and leucocyte count were elevated and the patient was weaker. Both bases were dull, but the œdema was gradually disappearing. On August 20th paracentesis was performed at 9 A.M., the trocar being inserted in the mid-line about midway between the umbilicus and symphysis. After 1200 c.cm. slightly cloudy reddish fluid had been withdrawn the flow stopped. As there still seemed to be fluid in the abdomen the trochar was again inserted about half an inch lower. Immediately the patient felt a sharp pain in the abdomen and the needle was withdrawn. Slight bleeding from the puncture followed, and the patient became pale and showed signs of collapse, with a weak, thready pulse and cold extremities. Respiration was periodic and gasping. Intravenous injection of saline solution was attempted, but the veins were too collapsed to be entered. Death occurred at 12.30 P.M. At the necropsy 3000 c.cm. of thin bloody fluid and a large amount of clot, weighing about 1100 g., were found in the peritoneum. The splenic artery was calcareous and showed an aneurysm about 3 cm. in diameter, with a crevice about 4 mm. long in a fibro-calcareous area. The sac contained a small amount of blood and clot. The case is interesting on account of the rarity of the lesion and the dramatic ending, the rupture occurring during the simple procedure of paracentesis abdominis. The reason for the rupture at this moment can only be conjectured. The excitement of moving the patient and performing the operation might have increased the blood pressure to the bursting-point of the aneurysm, or the withdrawal of the fluid in the peritoneum may have diminished the pressure of the structures surrounding the aneurysm. Direct trauma from the trocar was shown at the necropsy to have been impossible. In over 4100 necropsies at the Massachusetts General Hospital aneurysm of the splenic artery was found three times.

[1] Boston Medical and Surgical Journal, April 14th.

"IMAGINATION, COÖPERATION, AND ENTHUSIASM."

ON May 5th the Savoy Hotel, London, washed its dirty linen in public, and far from being an unsightly, evil-smelling, or otherwise unseemly procedure it was a revelation of the possibilities of laundry-work. A V-shaped building, of which one arm is devoted to work and the other to welfare, presents many interesting features. We could spend much time describing the processes of marking (by sewing on labels, not by a red cotton spider) and sorting; the drums which wash by rotating through soapsuds; the perforated ringers, which do not twist; and the drying and ironing machines. But we can comment here only on two details. Those who are specially interested in the spread of infection will rejoice to hear that the handkerchiefs are kept separate throughout, and, when washed apparently clean, are boiled more than once; while to the wearers of the double collar we would speak of a moulding machine which gives a round edge to its bend, leaving room for the tie to slip easily. But we are more concerned with the welfare of the cheerful-looking men and girls who feed the machines, fold, and sort the linen into rubber-wheeled trollies, and of the specially skilled hands who manipulate the electric irons. The atmosphere is fresh and cool throughout the building; a representative of the Industrial Fatigue Research Board, who is investigating conditions in the laundry trade, is now making interesting comparative observations in this laundry. Each employee is weighed and medically examined on engagement, and his or her condition card-indexed. A weekly medical inspection is then carried out. The triangular welfare room and surgery combined has doors at each angle of its base, so that the staff can file past the doctor, with bare chests and arms, with the least possible delay, and dermatitis or scabies can thus easily be detected. Those who wish to consult the doctor, or who look ill, are given a ticket and return later for a more detailed examination. Dental cases are referred to hospitals or clinics. A full-time welfare worker, who has had nursing experience, is in charge of this welfare room, and provides first-aid treatment and the medical officer proposes shortly to start a series of lectures or informal talks on hygiene to the workers. Each girl, having been passed by the doctor, is given a steam-heated ventilated metal locker where her out-door garments can dry if necessary, and where she keeps the hand towel provided for her individual use. Ample lavatory accommodation is available. Wash troughs with many separate jets replace the ordinary basin and plug. Two bath-rooms are in constant use by the staff in rotation during working hours, so that every employee can have a bath a week. The working hours are 8 to 6, with an hour off for dinner at 12, and 10 minutes' break at 10 A.M. and at 3 P.M. Dinner is provided at a low price in a spacious mess-room, with polished floor available for dancing; it seats 150 at small tables, and separate chairs with backs are provided. This canteen is also open for the supply of tea and coffee half an hour before work starts in the morning. The employees much appreciate this arrangement, for difficulties are frequently associated with the domestic facilities of workers for obtaining food early in the morning. A general committee of

employees, from which even forewomen are excluded, elects appropriate subcommittees to arrange the bill of fare for the meals and occasional entertainments. A rest-room, lending library, and tiled kitchen with steam and gas apparatus, complete this part of the building. The flower and fruit garden lies between the two arms of the V and is well planned; a vegetable garden adjoins. A week's holiday on full pay is granted to each employee who has worked for a year, increasing by a day a year to a fortnight.

It is the human side of the undertaking that is most striking, and the pleasant impression is given that the human element is regarded as the most important part of the machinery of this very complex factory, which, by the way, is open to inspection by appointment. Regular meetings between the manager and the staff take place, when valuable hints as to possible improvements have been offered by the latter. This arrangement ensures also that grievances will be ventilated and discussed. Laundry-work has hitherto been considered one of the most backward and difficult trades to organise on a healthy basis, but this appears to be good pioneer work. When the economic aspect of this excellent scheme of preventive medicine is considered the debit side of the account, the money actually expended, which is easy to reckon, may at first sight seem to outbalance the credit side, which is less easy to estimate and is not so immediately obvious. But when decrease in labour turnover, and in lost time, increase in quality and quantity of work, and that indefinable though invaluable asset, a contented personnel, come to be reckoned up, the debit side sinks into the background, and the scheme is found to be based on true economy. Even on the present scale of charges it is hoped that a laundry run on these lines may be made remunerative. It is noteworthy that the personal laundry of the hotel staff is done here as well as that of the visitors. But clean healthy laundries are at least as desirable as clean milk, and for both an adequate price will have to be paid. Meanwhile, it would be difficult to find words more appropriate to describe the impression created by this most recent addition to our model factories than those of "Imagination, Coöperation, and Enthusiasm" adopted by the manager as its watchword.

THE CYCLE OF CHOLESTEROL IN THE ORGANISM.

ACCORDING to A. Chauffard, G. Laroche, and A. Grigaut,[1] there are three factors which determine the metabolism of cholesterol, the food, certain endocrine glands, and the liver. The influence of food is but temporary, and any increase of cholesterol in the blood rapidly disappears. The most important endocrine factors are the cortex of the adrenals and the corpora lutea. The latter contain much cholesterol, but are only active at certain periods. The cells of the adrenal cortex are the chief factories of cholesterol in the organism. The adrenals surpass all other organs in their cholesterol-content, even the nervous system itself. In the adrenals of individuals killed suddenly cholesterol forms 42–54 per mille of the fresh gland; in those who die of disease there is only 20 per mille. Cholesterol appears to exist in two forms in the adrenals; part is "fixed" and forms an integral part of the construction of the cells, while the larger part is mobile. The former or "organ-cholesterol" appears to be common to all organs and amounts to about 2·5 per cent. This seems specially evident in the fœtus. During the first five months the adrenals contain about the same amount as the liver and kidneys, corresponding to the amount of organ-cholesterol in the adult. During development the amount of cholesterol in these organs does not increase, while the amount in the adrenals from the sixth month (at the seventh month it is 8·16 per cent.) greatly increases and at birth reaches 36 per cent. At the sixth to the seventh month the cells of the cortex take on their cholesterol-forming function, probably corresponding to the greater demands of the growing organism for cholesterol. The authors give their reasons for not regarding the adrenals as merely storage organs for cholesterol. The increase of this substance in the cortical cells is associated with other indications of their cell activity. The liver and bile play an important part in the cholesterol cycle. The bile by the amount of its cholesterol gives an indication of the activity of the hepatic cells which secreted it, and on the whole the amount of cholesterol in the bile runs fairly parallel with the amount present in the blood. Ligature of the bile-duct increases the amount of cholesterol in the blood. During gestation the fœtus seems to receive some cholesterol from the mother.

[1] Ann. de Méd., 8, 1920.

THE MEDICAL AND DENTAL REGISTERS.

THE Medical Register for 1921 contains 44,761 names, being an increase of 251 on the number recorded the previous year. 1457 names were added during the year on registration—457 in England, 393 in Scotland, and 264 in Ireland; the last figure being the highest recorded and double the entries of 20 years ago, whereas the figures for Scotland and England have declined in the same period. 333 names have been added to the separate Colonial List, to which attention is now called by painting blue the edges of the leaves. From year to year it becomes more inopportune to place these names at the end of a large volume, where they may readily be overlooked, when the privileges and duties attached to registration are precisely the same in whatever part of the Register the name is entered. Ten new names appear on the Foreign List, the degree-granting university being in one instance each Florence, Brussels, Louvain, Bologna, Palermo, Turin, and in four instances Ghent. Reciprocity has ceased with Belgium, and no further registrations will be accepted without examination. It would add to the helpfulness and interest of the Register if the numbers of men and women respectively were severally noted.

The Dental Register for 1921 contains 5610 names, being an increase of 155 on the number recorded the previous year, a matter for congratulation. Eighteen new names appear on the Colonial List and 5 on the Foreign List, the professional qualifications of the last-named having been obtained at Kharkoff (2), Petrograd (2), and Novorossiisk. The number of British registrations occurring in 1920 was the same as in 1917 and 1914.

The Medical and Dental Students Register contains the names of 2531 medical students and 560 dental students who have passed their entrance examinations and entered for professional study.

COLSTON UNIVERSITY RESEARCH SOCIETY, BRISTOL. This Society, formerly known as the University of Bristol Colston Society, collects funds annually for the furtherance of research in the University of Bristol, and is believed to be the only society of its kind in Britain. Last year, under the presidency of the Bishop of Bristol, £406 was collected. This year's President is Alderman Frank Sheppard, and the guest of the evening at the forthcoming annual dinner will be Sir W. H. Bragg. The Society has recently published a brief summary of work done during the past three years. Under the heading of chemistry there is a brief reference to the work of Dr. M. Nievenstein on tannins. In the departments of anatomy and physiology Professors E. Fawcett and G. A. Buckmaster are pursuing their personal researches, the former on the morphology of the cranium, and the latter on the transport of carbon dioxide. Professor Buckmaster and Dr. Hickman are also engaged on the production of apparatus for simplified electro-cardiography and the recording of body movements. Mr. A. L. Flemming is investigating the action of surgical anæsthesia on respiration. From the department of pathology Professor Walker Hall announces progress in investigation into the relation between nutrients and the life-history of pathogenic bacteria. The department of medicine reports researches by Professor F. H. Edgeworth into the development of the laryngeal muscles; also work by Dr. Carey Coombs on the ætiology of rheumatic heart disease (an account of which appeared in THE LANCET, 1920, ii., 220), and work by Dr. Coombs, with Dr. C. E. K. Herapath, on the intrinsic anatomy of the human auricles. Alderman Sheppard, in his appeal for funds, says that at least £1000 a year are needed to maintain pre-war activities.

Public Health Services.

Hospitals and Insured Patients.

A RECENT meeting between members of the British Hospitals Association and representatives of the principal Approved Societies discussed the possibility of providing institutional treatment for members of these societies in return for contributions on an agreed percentage basis. The arrangement would involve some measure of priority being given to members requiring in-patient treatment over other cases of like urgency. If the hospital committees generally should prove inclined to grant this preference, the two parties will meet again for the purpose of drafting a definite scheme. In the meantime we note with satisfaction that at its annual conference, held early this week, the National Deposit Friendly Society decided to allocate £127,000, namely one-third of surplus of £381,000 for the treatment of its members in hospitals.

Paying Patients at Poor-law Hospitals.

An important deputation from the British Medical Association was received on April 26th by Sir Alfred Mond and some of the principal officers of the Ministry of Health, when Sir Clifford Allbutt and Dr. R. A. Bolam emphasised the desire of the Association to work in harmony with the Ministry. Mr. N. Bishop Harman, as chairman of the Hospitals Committee, then laid before the Minister three points which the Association regarded as essential to the utilisation of Poor-law hospitals for civil needs:—

1. The local medical profession of the districts concerned should be consulted with regard to any scheme which it was proposed to bring into operation.
2. Patients should only be accepted, as a general rule, on the recommendation of a private practitioner.
3. Private practitioners should have the right of entry so that patients might continue to be attended within the institution by the practitioner of their choice.

In reply the Minister of Health admitted that the whole position of the voluntary hospitals was one of great difficulty owing to their foundation in the past upon the generosity of private individuals and the generosity of the medical profession. Our voluntary hospitals had been equal, if not superior, to any run on municipal or State lines in other countries. There was much to be said for the close coöperation of voluntary effort, and he did not think anybody would like to see the voluntary system disappear. He felt hopeful that we were not always to remain in the present financial difficulties. Many people of means who found it impossible to go to nursing homes and inconvenient to be nursed at home, were looking for some institution which would enable them to get reasonable nursing and medical attendance on cheaper terms. Something was now being done in our general hospitals, following the lead of St. Thomas's. He hoped for further developments in this direction. In continental countries people did not hesitate to go into a large municipal hospital. People here would have to get rid of prejudice a little and make use of institutions. The whole question of Poor-law administration was tied up with the legal position of boards of guardians which could not be altered except by legislation. The Ministry had made an endeavour at Bradford to put into practice the principle of consultation with professional men, and he thought that would prove to be a valuable line. But boards of guardians could not be compelled: they could only be advised.

The suggestion of only allowing people to use the infirmary on the recommendation of a general practitioner had, Sir Alfred Mond agreed, many advantages, but he also saw difficulties. Suppose a patient wanted to go there and the doctor attending refused to allow him to go. The patient then might change his doctor and find one who would send him. That was a possible contingency. Or a man might insist on going and create difficulty. The doctor had some knowledge of the patient's financial standing, and would be in a position to judge whether he ought to go to the infirmary or not. But that might be putting on the doctor a line of examination suitable only to a chartered accountant. He did not wish to create opportunities of friction between the doctor and his patient.

Sir Alfred Mond concluded with a promise to go into all these matters with a view to being as helpful and sympathetic as the circumscribed powers which he possessed would permit, and he suggested another meeting for further discussion.

Workmen's Contributory Hospital Scheme.

A contributory scheme has been working well since the beginning of the year in connexion with the Norfolk and Norwich Hospital. This hospital, which serves a large part of the county, requires something like £250 a week to make its income and expenditure account balance. Each parish in the county is now being asked to accept its proper share of responsibility, which amounts to about 2*s*. 3*d*. per head. As patients, on the whole, are willing to contribute towards the cost of their maintenance and treatment, there is a good prospect of a solution of the question of voluntary hospital finance in Norfolk without any levy on the rates.

Women Practitioners and a Restricted Panel.

An important side issue affecting the new allocation scheme came before the London Insurance Committee on April 28th. Four women practitioners on the London medical list prefer not to undertake the treatment of men patients, and the insurance committee admits that it is not unreasonable for them to decline to do so. But under the terms of the 1921 contract any practitioner who is relieved by the insurance committee of the liability to have insured persons assigned to him surrenders 7½ per cent. of his share in the practitioner's fund. It may be doubted whether Section 5 of the Distribution Scheme was intended to have this construction placed upon it. While there are women who may prefer to have a mixed practice and would regard any restriction as a tacit admission of sex disqualification, there are others whose natural bent is towards children and adults of their own sex. Should the latter be willing to have any insured women assigned to them, they are not restricting their lists capriciously. Their bent may well be in the public interest; the question merits a solution on public grounds, and, in the meantime, it is hardly fair to mulct them in a substantial part of their income. They would be quite entitled to retaliate by choosing their own panel entirely and refusing to have *any* patients assigned to them. We cannot avoid the impression that the London Insurance Committee has misinterpreted the spirit of the regulations, if not their letter.

Medical Records.

The London Panel Committee recently resolved that the present medical records are neither advantageous to the medical service nor beneficial to the community, and that it is desirable they should be discontinued forthwith. No concrete suggestion was offered for any alternative form of record. At its meeting on April 28th the London Insurance Committee, without expressing any opinion on the present form of record, recommended that provision should be made in the records for all matters likely to be of value in connexion with the case. That is, of course, the crux. What is likely to be of value? One illustration may serve. Dr. Stevenson noticed some years ago that gastric ulcer was disappearing from the certificates as a cause of death in young women. Was this due (as we believe) to a change in the interpretation of hæmatemesis or to an actual alteration in the incidence of gastric disease? Hospital records deal with too selected a population to decide the point. There is nothing left but the records of panel practice.

Range of Medical Service.

The Wigan Insurance Committee has circularised the insurance committees throughout the country pointing out the cumbersome and expensive procedure necessary to decide whether or not an operation comes within the scope of medical benefit, and suggesting that every kind of medical treatment should be made available to insured persons under the provisions of the National Insurance Acts. The London Insurance Committee,

concurring in this view, has passed on the recommendation to the Minister of Health. Formal resolutions such as these, useless though they may appear, will strengthen the hands of those who are determined to offer a complete medical service to insured persons.

In Wiltshire county during the first quarter of 1921 some 12,500 persons applied to make their own arrangements for medical treatment—namely, 12,311 with the G.W.R. Medical Fund Society, 103 with the R.A.M.C., 97 with the Salisbury Infirmary, and 6 on personal grounds.

UNIVERSITY OF BRISTOL APPEAL: THE CLAIMS OF THE MEDICAL SCHOOL.

(FROM A CORRESPONDENT.)

IN an address to the Bristol Medical School some years ago the late Sir William Osler remarked that some universities had both money and men; others had plenty of money but no men; others, again, had the men but not the money. Bristol has never failed to produce the men, so far as medicine is concerned. If we look back at the brief history of the University movement in Bristol we find that as early as 1814 there were lectures on "Physiology, Pathology, and the Practice of Medicine" by Dr. J. C. Prichard. To these other lectures were added, and in 1832 the Bristol Medical School issued a prospectus, in effect an apologia for the establishment of a school of medicine in the provinces. A year before this the Bristol Medical Library had been formed. In 1874 the foundation of University College, Bristol, was publicly proposed by the late Dr. John Percival, Bishop of Hereford (at that time headmaster of Clifton College), supported by Dr. Temple, Dr. Jowett, Professor Freeman, and others, and in 1876 its first session opened in temporary premises. In 1893 the medical school became affiliated to University College, and was, with the medical library, housed in the permanent premises of the College, the local medical profession contributing more than half the cost of the buildings.

Since that time many considerable additions have been made to these premises, thanks to the generosity of the Wills and Fry families in particular. At the present time a magnificent block of buildings, giving the University (as it became by Royal Charter in 1909) a fine frontage in a main thoroughfare, is being built by the brothers George and Henry Wills in memory of their father, himself first Chancellor of the University, at a cost of £500,000. Not only so, but the same donors have given to the University the Royal Fort House and its gardens, with a site and funds for a new department of physics; the Victoria Rooms, a large public hall, for conversion into a students' union; and several other houses for halls of residence.

Now, the Faculty of Medicine played so honourable and active a part in laying the foundation on which this splendid superstructure is being reared, that its claims to consideration ought to be met in the near future. The distinguished men in charge of the departments of anatomy and physiology have adequate premises, equipment, and assistance. Those in charge of the final subjects are, however, less fortunate. They have no real departments at all, clinical teaching being carried on in institutions separate from the University where they deliver their systematic lectures. What is wanted is a constructive policy to unify these institutions with the University in such a manner as to ensure that any future disposition of existing or new buildings shall make adequate provision for the systematic teaching of medicine in every form. This is a difficult matter, but there is reason to believe that the strenuous efforts made in this direction during the past few years may ultimately be crowned with success. Moreover, the Vice-Chancellor has stated plainly that an early charge on the funds raised by the appeal will be the endowment of professorships in the Faculty of Medicine. If these expectations are realised, the Bristol Medical School should become a leading provincial school of England.

CONTROL OF VENEREAL DISEASE.

Occupation and Venereal Disease.

THIS very difficult question is raised in the report of the medical officer of health for the City of London, presented to the Sanitary Committee on Feb. 22nd last. In May, 1919, Dr. W. J. Howarth gave to his committee particulars of the occupations of 104 patients, and suggested that the matter should be brought to the notice of the Local Government Board with a recommendation that it should be made illegal for persons suffering from venereal diseases to be engaged in certain specific occupations.

In the recent report Dr. Howarth submits a tabular statement showing the occupations of over 1100 patients. The list includes persons engaged in the preparation and handling of food, hair-dressers, domestic servants, &c. In the case of the ordinary notifiable infectious diseases, interference with the occupation of the patient comes as a matter of course, though special difficulties arise in the case of diphtheria or enteric fever "carriers." The General Order of December, 1912, which made tuberculosis notifiable, contains in Article XVI. a special proviso according to which the person notified is not to be subjected to "any restriction, prohibition, or disability affecting himself or his employment, occupation, or means of livelihood on the ground of his suffering from tuberculosis." The object of this proviso was, no doubt, partly humane—to prevent the notified person from being regarded as a pariah, and partly due to the fact that such restrictions might lead to the concealment of the disease and a failure to secure adequate treatment in its early and more hopeful stages. Before the General Order came into force we believe it was customary for sanitary authorities operating under local Acts to exercise some interference with respect to persons suffering from "open" pulmonary tuberculosis who were engaged in occupations such as dairying, baking, or cooking. Objections also inevitably came from fellow-workers, in the case of indoor occupations, to working in contact with a person known to be suffering from an infectious stage of pulmonary tuberculosis. It therefore comes about that Article XVI., whatever may have been the intention of its framers, has not been effective in enabling the consumptive to carry on an occupation for which he is physically fitted, but from which he should be excluded on public health grounds. Fortunately, in the case of the consumptive it is usually desirable in his own interest that he should engage in an occupation of an outdoor character which renders him no danger to his fellows, and the need for a change of work can generally be suggested to him for the sake of his own health.

When we turn to the much more difficult question of the occupation of persons suffering from venereal diseases, we feel that in the first instance we want a great deal more information. Free clinics for venereal diseases have not been in existence very long, and our great object for some time must be to encourage early and continued treatment. No doubt we shall before long have to adopt some modified system of notification and restriction for those cases which will not submit to adequate treatment. At the present time we have to trust to patients carrying out the precautions enjoined upon them by the medical officers of the clinics or the private medical practitioners who are responsible for their treatment. We have said that more information is needed. The information we have in mind is already in the possession of the medical officers of the venereal disease clinics all over the country. It only requires to be tabulated and collected. A considerable section of the public have an altogether exaggerated idea of the danger of contracting venereal diseases "accidentally" or "innocently." Medical men, in the absence of reliable statistics, have only vague opinions on the subject. Even the individual medical officer of a clinic who may be treating either gonorrhœa alone or syphilis alone, has only his own experience as a guide and may not have attempted to classify the

cases coming under his ken as to whether they were acquired accidentally or in the ordinary way.

We have had the advantage of obtaining the experience of one medical officer of a venereal disease clinic who had to deal chiefly with syphilis, and it may be useful to give the results of his experience shortly. The cases of gonorrhœa seen by this medical officer were mostly among women, and the number of cases not contracted through sexual intercourse was very few. A few cases of gonorrhœal vaginitis among girls were met with, contracted by sleeping with infected mothers or sisters, but no cases of what might be called "accidental" infection, such as through the use of infected public conveniences. The contacts infected were, in fact, bed-contacts. The experience of this clinic was, however, chiefly with regard to syphilis. Of 1500 cases of syphilis admitted for treatment, there were only 10 cases that had not been acquired in the ordinary way through sexual intercourse. Of these 10, two were medical men with primary sores on the fingers contracted as the result of operations; one was a baby of 18 months old, infected by sleeping in the same bed with an uncle and aunt, who both had florid syphilis; one was a girl of 11 who had slept with a syphilitic elder sister; and another was a girl of 11 who was thought by a syphilitic sister, aged 19, to have been infected by herself. Two of the remaining cases, a girl aged 12, and a boy aged 7, were members of a family of which the mother and father had syphilis. The father died, and it was thought that the girl contracted the disease from nursing the baby which had congenital syphilis and subsequently infected her younger brother. Of the three remaining cases: (1) a girl aged 24 had a chancre of the lip 14 days after a wedding dinner at which she drank from a glass of wine after the bride, who was at the time suffering from syphilis. This girl was, however, keeping company with a soldier about this time and became pregnant. (2) In the case of a boy aged 10, with a papular secondary rash and no history of any primary sore, the source of infection was never elucidated. (3) A soldier developed a chancre on the top of the scalp from an infected glove during a boxing contest.

The experience of this one clinic goes to show that the risks of accidental infection run by the public from public conveniences, the use of cups, forks, and spoons, &c., are remote. Out of 1500 cases only 10 were infected in an extraordinary manner. Of these 10 two were examples of the well-known risks run by surgeons, five were examples of intimate family or bed contact, the wedding-dinner case may have been acquired in the ordinary way, one case resulted from a boxing contest, and the last remained a mystery. It must always be a tragedy for any person to acquire syphilis or gonorrhœa in an accidental or innocent manner, and it is a very uncomfortable thought that we may have our food prepared, our hair cut, or be shaved by attendants who are suffering from an infectious stage of syphilis. It may be, however, that the real risk is a very remote one. We ought to know the facts as far as they can be ascertained. Venereal disease clinics have been in operation long enough to afford valuable information. We suggest that the Ministry of Health might usefully address inquiries to the medical officers of all the clinics in the country for the purpose of having the information in their possession tabulated and collated with a view to ascertaining the approximate percentage of venereal disease which is acquired in what we may call an "accidental" manner. When this has been done we shall be in a better position to consider what restrictive legislation is necessary in the case of persons suffering from an infectious stage of a venereal disease.

A Three-cornered Problem of Infection: Doctor—Patient—Employer.

Whilst the question of obligatory notification of venereal disease still awaits settlement, serious problems arise to emphasise the need for protecting the community against the danger of infection from recalcitrant individuals suffering from gonorrhœa or syphilis. A correspondent has asked us to comment upon one such problem, of which the pertinent facts may briefly be stated as follows:—

A cook had been attended by her medical practitioner for a considerable time. She informed her mistress that she was suffering from internal discharge. She became worse and was ordered to bed. The lady of the house was unable to obtain any information from the doctor as to the nature of her servant's illness, but was informed by another maid that the cook was suffering from venereal disease, and that the doctor had promised not to disclose the nature of her ailment. The patient was ordered to take a hot bath every evening, there being but one bath in the house and some 12 people to use it. Not wishing, however, to dismiss her cook unless there was serious risk, the mistress again attempted, this time through a friend, to obtain information from the doctor. The latter made no positive statement, but the general impression gathered by the interrogator strengthened the suspicion that the patient was suffering from venereal disease. Eventually the mistress, after consultation with her own doctor, gave notice to the cook, who thereupon left.

The essence of the problem appears to be this. When a medical man is attending for venereal disease a patient whom he knows to be living under conditions which are a menace to the health of others what attitude should he adopt? Certainly he cannot give any information to the employer as to the nature of the patient's illness, but he can impress upon the patient the necessity which exists for giving up the situation at once. It may be objected that the patient will refuse to carry out this injunction. We believe that the practitioner endowed with tact and a knowledge of human nature would practically always achieve his object. The difficulty then arises that patients suddenly leaving their situation would be unable to find residential accommodation while undergoing treatment without attracting an undesirable degree of notice. This points to the establishment of hostels, both for men and women, where they could obtain treatment, or whence they could go to clinics for that purpose. Many such patients must of necessity be received free of charge, whilst others could contribute towards their maintenance. Any expense incurred by the State would be counterbalanced by shortening the period of wage-earning incapacity and preventing extension of infection. In the particular case on which comment was desired it seems to us imperative that professional confidence should be respected, and therefore the medical man acted with propriety in abstaining from informing the mistress, directly or indirectly, as to the condition of the servant. Nor was the doctor bound by law or ethics to insist upon the patient informing the mistress of the nature of her disease. It was, however, his duty to impress upon the patient the necessity of at once vacating her post. In order to facilitate the desired action the medical man might well have given to the patient a certificate to the effect that her physical condition was such as to preclude her from remaining in her situation. If she then voluntarily informed her employer of the nature of her disorder, such a course would facilitate any measures of disinfection. There remains the exceptional case in which the patient refuses after warning to put into practice the doctor's advice. Apart from any wide measure of compulsory notification, it is evident that the hands of the medical man should be strengthened to deal with such a situation. Any patient who has received a written statement from a doctor that he is a danger to the health of his employer and that he should at once vacate his employment, if he then fails to do so, should be notified as wilfully subjecting others to the risk of venereal disease. Legislation is desirable to empower such notification and determine the penalty for default.

A Red Cross Conference.

The first of the Red Cross regional conferences on venereal diseases to be held in Europe will convene at Copenhagen on May 20th, under the auspices of the League of Red Cross Societies. The Danish Red Cross Society will act as host and convener of the

conference. The national Red Cross Societies of Holland, Great Britain, Norway, Sweden, Germany, and Finland have been invited to participate. Each Red Cross Society participating will send official delegates, and it is expected also that the governments of the countries concerned will be represented.

The problems to be discussed at the conference are outlined below:—

General summary of conditions in each country.
Medical measures against venereal diseases.
Educational measures against venereal diseases.
Special problems, including supply and costs of arsenical compounds for the treatment of syphilis, the possibility of establishing an international standard for the export and import of such arsenical compounds; the provision in important ports, by international agreements, for the treatment of cases of venereal diseases among sailors, and measures to be taken in connexion therewith; the part of the Red Cross in combating venereal diseases, its relation to government and voluntary agencies.

Following the first European regional conference in Copenhagen, the League of Red Cross Societies expects to arrange other regional conferences in other parts of Europe and subsequently in other parts of the world. The inception of such a conference by the League of Red Cross Societies indicates that the combating of the venereal diseases is recognised as an appropriate function of Red Cross societies. Considerable scope exists at present for such activity on the part of Red Cross Societies in the directions of popular education as to the causes and results of these disease and the provision or extension of facilities for the treatment of existing infections. Both these branches of antivenereal work are very suitable for adoption by Red Cross societies as a part of their programme of coöperation with public health authorities. In this country the instruction of young people, parents, teachers, and others in regard to the dangers of venereal diseases has been undertaken successfully by the N.C.C.V.D., working in close contact with the Ministry of Health and receiving the support and assistance of the British Red Cross Society. We are glad to learn that the National Council will be represented in the British delegation at Copenhagen, and that an exhibit of their educational methods and those employed by the American Social Hygiene Association will be a prominent feature of the conference.

In countries, as in Great Britain, where the Government is alive to the necessity for providing treatment for all sufferers from venereal diseases, and where an influential society for combating venereal diseases is in existence, the Red Cross may probably find it sufficient to content itself with lending moral and financial support. In countries where these factors are lacking or are inefficiently organised the Red Cross could advantageously play a more active rôle in providing education and treatment, and urging the adoption of such measures on the responsible authorities. The training of doctors and nurses, and the encouragement or endowment of further research as to the diagnosis and treatment of syphilis and gonorrhœa might well be considered desirable functions to be fulfilled by a Red Cross society. From the broader international point of view, it seems desirable to urge the development of a common basis for the prosecution in various countries of an active venereal campaign. As is well known, the outlook upon the venereal diseases varies greatly in different nationalities, and there appears to be a necessity for the exchange of views and opinions as to the practicability or otherwise of methods adopted in different countries for the combating of venereal diseases. For example, the outcome of the controversy in England as to immediate self-disinfection will be a valuable contribution to the campaign against venereal diseases in other parts of the world. The institution of such an organisation for international coördination and coöperation in measures against venereal diseases appears to be imminently desirable. The nucleus of such an international bureau exists in the League of Red Cross Societies, whose Division for Combating Venereal Diseases has been organised to act as a clearing-house for information and which is in communication with national societies and leaders in every part of the world.

AN INQUIRY INTO THE SALE OF DISINFECTANTS.

IT is extremely unfortunate that the views of the general public on the scientific uses of disinfectants are not so sound as they should be. In only too many illnesses the public thinks that disinfectants ought to be used to kill germs in their own body, or to prevent disease in others by the killing of germs in surrounding patients. Fortunately, the vast majority of patients are prepared to accept their doctor's advice before they start trying to kill the germs in their own body. The magic word "poison," which the Poison and Pharmacy Act, 1908, requires should be placed on receptacles of most poisonous substances, suffices to prevent the public from drugging themselves to the extent of harming their persons. Disinfection of the surroundings of patients is, of course, a wise procedure in the case of some illnesses, although disinfectants have been overdone. It is almost needless to point out that we are greatly handicapped in dealing with infectious disease, since we know so few of the germs causing infectious disease, and so little of the factors concerned in their spread.

Public Ignorance of the Function of Disinfectants.

Dr. T. W. Naylor Barlow some ten years ago published a valuable paper in *Public Health*, part of which dealt with the dangers of disinfectants. Quoting the medical officer of health of the county of Roxburgh of that time he stated that disinfection should be applied after cleaning and not in the place of cleaning. Dr. Barlow held that many housewives, especially those among the less intelligent classes, think that if they scatter plenty of disinfectant about no other precautions are necessary to prevent the spread of infectious disease, and he gave chapter and verse for his opinion. He also complained of the condition of ashbins and ashpits which were wrongly used, and pointed out that it was impossible to educate the public in the correct use of ashpits and ashbins if a health or cleansing department served out to the public some deodorising powder, not a disinfectant, to cloak their own carelessness. Quoting Dr. Meredith Richards, he agreed that the time had come when hygienists should free their minds from cant and teach both their authorities and the public that chemical disinfectants are of strictly limited utility, and that by far the greater part of the money now spent thereon would be better expended on soap, soda, and scrubbing-brushes. Dr. Barlow holds that disinfection of bedding in a steam disinfector is all that is necessary; he does not believe in the spraying of walls and gaseous disinfection for the reason that the organism cannot be brought into contact with a sufficient strength of the liquid or gas for a sufficiently long time. Although it is, perhaps, no longer the fashion nowadays to disinfect everything and everybody, yet we have not yet reached the position of complete sanity with regard to disinfection. Is it only in towns whose modes of thought are early Victorian, not to say pre-scientific, that disinfection is carried out after measles, for instance? Bleaching powder was used in the army to disinfect the ground around camp kitchens, stand-pipes, &c. At a recent large Boy Scouts Camp the ground near the urine pails was liberally bestrewn with a dark reddish-brown powder, which a local shopkeeper prominently advertised, basing his recommendation on the fact that it was used by the camp authorities.

But municipal authorities themselves are at times at fault. A well-known seaside resort used till recently to sprinkle its streets with sea-water. Although economy was one reason for its employment, a second aim was to disinfect the road surfaces. The salt water proved to be harmful to the wheels and tyres of vehicles, and the experiment was in consequence abandoned. Disinfectants are, however, thought to be of such importance in at least one town that a special subcommittee meeting is held annually to consider the tenders for disinfectant solutions and powders. To this meeting the sanitary inspector is invited, but not the medical officer of health. The result is the expenditure of a sum of money, admittedly small, which could be saved with no detriment to the public health.

Nevertheless, disinfectants have rational uses. Probably the majority of public health workers hold that micro-organisms are the main cause of infectious diseases, and would agree that disinfectants are of use in connexion with certain infectious fevers. Whether disinfection is necessary after cancer must remain a moot point until the question of the infectivity of cancer, a question which many consider is definitely settled in the negative, has been as finally decided as such a problem can be decided.

At the conference at the Royal Sanitary Institute held the summer of last year, Professor Henry Kenwood's proposal was adopted, that the Government should take up the control of the sale of disinfectants and that the sale of any liquid as a disinfectant in the public interest and on public health grounds be controlled by legislation, which should demand that any liquid "disinfectant" should have a carbolic acid coefficient (as tested by an approved method) of at least one. Penalty should be imposed for any false or misleading statements as to the germicidal value of a disinfectant, and for any misleading instructions with reference to the effective use of a disinfectant. Already the navy, army, and Government departments, and many local sanitary authorities protect themselves by the stipulation of their tender, and it is only the private purchaser who is left unprotected.

Nature of Disinfectants Stocked at Oilshops.

Inquiry has been made at some oilshops as to the nature of the disinfectants stocked and the approximate quantity sold, with the following result in two urban areas:—

I.

Shop No. 1.—Jeyes' fluid (8 oz. bottles), 3 weekly; Sanitas fluid, 1 weekly; carbolic fluid (loose), ½ gal. weekly; carbolic powder (packets and tins), 6 weekly.

No. 2.—Jeyes' fluid (bottles), ½ to 1 gal. weekly; Sanitas fluid (bottles), 2 or 3 pints weekly; carbolic fluid (loose), 2 gal.; Sanitas powder, 2 or 3 lb. weekly; Jeyes' powder, 3 lb. weekly.

No. 3.—Carbolic fluid (loose), pint weekly; Jeyes' fluid and Sanitas fluid (bottles), each 1 per 3 weeks; carbolic powder, 2 lb. per annum.

No. 4.—Jeyes' fluid (bottles), 2 to 3 gal. weekly; carbolic powder and Sanitas powder, each six tins weekly.

No. 5.—Jeyes' fluid, Sanitas, Milton, and carbolic (loose) (bottles), each ½ gal. weekly; Jeyes' powder and Sanitas powder (tins and packets), each 3 to 4 lb. weekly.

No. 6.—Jeyes' fluid (bottles), carbolic fluid (loose), Sanitas fluid (bottles), each 1½ gal. weekly. Condy's fluid (bottles), 2 monthly; carbolic powder (tins), 6 weekly.

No. 7.—Jeyes' fluid (bottles), Sanitas fluid (loose and bottles), carbolic fluid (loose and bottles), each ½ gal. weekly.

No. 8.—Jeyes' fluid; Sanitas fluid; Smith's fluid (bottles); carbolic fluid (loose); Smith's powder (packets).

No. 9.—Sanitas fluid (loose); Jeyes' fluid (bottles); Sanitas powder and carbolic powder (packets).

II.

Shop No. 1.—Liquid carbolic, about a gallon weekly.

No. 2.—Liquid carbolic, about half a gallon weekly.

No. 3.—No. 2 disinfecting fluid (under 3 per cent. carbolic), Jeyes' fluid, and Sanitas.

No. 4.—Dussek's fluid, Jeyes', Milton, and Sanitas.

No. 5.—Carbolic fluid, Jeyes', and Sanitas. The carbolic fluid on sale is of ordinary commercial standard and the sale is small, varying according to the weather conditions.

No. 6.—Disinfectant fluid.

No. 7.—Sanitary fluid in 5 gal. drums. No strength stated.

No. 8.—Wholesaler. Best carbolic disinfecting fluid. No strength stated.

No. 9.—Bought as soluble disinfectant fluid from wholesaler. No strength stated.

No. 10.—Bought from wholesaler as best carbolic disinfectant fluid. No strength stated.

In a provincial town inquiry at the oil shops elicited the following approximate sales:—

III.

Shop No. 1.—C.D. fluid, 1 gal. weekly.

No. 2.—Cresol, 1 gal. in summer time weekly.

No. 3.—Cresol, said to be 16 per cent. solution, 1–2 gal. weekly.

No. 4.—Sanitas, 2 gal. weekly.

No. 5.—Sanitas, only a small quantity weekly.

No. 6.—Cresol, 2 or 3 gal. weekly.

All the shopkeepers sell in pennyworths and twopennyworths, and customers bring their own bottles.

Poisoning by Disinfectants Unusual.

The phenoloid class of disinfectant is as a whole relatively not poisonous. The physical consistence of most of these disinfectants is such that it is not easy to drink a large quantity of them. Small quantities even of the undiluted solution are obviously harmless. For some considerable time, in more than one fever hospital, it was the practice to apply undiluted izal to the throat and no harmful results accrued from the quantity which must necessarily be swallowed. Although cases of poisoning with lysol are recorded, accidental poisoning with this class of compound is very unusual, the colour, appearance, viscidity, odour, and taste are very manifest, and, for the reason cited above, a small quantity, possibly even a mouthful, taken accidentally would in all probability not do much harm. As regards exhibition with criminal intent, to be effective the substance would have to be present in such strength that its taste and smell would at once be apparent. If a person wishes to commit suicide by poison the facilities which already exist for obtaining poison—e.g., weed-killer, hydrochloric acid, sulphuric acid, nitric acid, soluble salts of oxalic acid, copper sulphate, turpentine, lead salts, especially lead arsenate, are so abundant that a determined man or woman would certainly be able to get one of them. A leaflet issued by the Board of Agriculture informs the public how to get weed-killer and lead arsenate.

It has been the aim of manufacturers of disinfectants to produce substances with a high coefficient. Much of the money that has been wasted on so-called disinfectants has been wasted by the public being persuaded to purchase a well-advertised substance of low coefficient value. It would seem that the time has come to allow the wider sale of these phenoloid compounds. Apparently there is no valid objection to their sale by oil-shops or ironmongers, although it would obviously be futile to limit the strength of disinfectants sold at these shops to a point at which they are quite ineffective. Such disinfectants are diluted more for the profit of the vendor than to render them less poisonous. A difficulty may, however, be found in a recent legal decision which, we are informed, makes it necessary to label these substances as poisonous.

Obligation to Label Disinfectants as Poisons.

This legal decision would appear to be based on the word homologues in the text of the Pharmacy and Poison Act, 1908, which regulates the sale of certain poisonous substances. The list of these, enumerated in the schedule, includes carbolic acid and liquid preparations of carbolic acid and its homologues containing more than 3 per cent. of these substances, except preparations for use as sheep-wash or for any other purpose in connexion with agriculture or horticulture contained in a closed vessel distinctly labelled with the word "poisonous," the name and address of the seller, and a notice of the special purposes for which the preparations are intended. Part 2 of the schedule also specifies the articles to be deemed poisonous within the meaning of the Act. "All preparations or admixtures which are not included in Part 1 of this schedule, and contain a poison within the meaning of the Pharmacy Acts, except preparations or admixtures the exclusion of which from this schedule is indicated by the words therein relating to carbolic acid, chloroform and coca, and except such substances as come within the provisions of Section 5 of this Act." Section 5 (1) states that:

"It shall not be lawful to sell any substance to which this section applies by retail, unless the box, bottle, vessel, wrapper, or cover in which the substance is contained is distinctly labelled with the name of the substance and the word 'Poisonous,' and with the name and address of the seller of the substance, and unless such other regulations as may be prescribed under this section by Order in Council are complied with; and if any person sells any such substance otherwise than in accordance with the provisions of this section or of any Order in Council made thereunder, he shall, on conviction under the Summary Jurisdiction Acts, be liable for each offence to a fine not exceeding £5.

(2) The substances to which this section applies are sulphuric acid, nitric acid, hydrochloric acid, soluble salts of oxalic acid, and such other substances as may for the time being be prescribed by Order in Council under this section."

It is doubtful whether, as a matter of policy, it is advisable to label these phenoloid disinfectants as "poisonous." Such a label focuses attention on this quality; possibly the community would be best served by labelling them "Not to be drunk." A fundamental principle is that a disinfectant should be applied in sufficient strength—the public, however, often think they are buying true disinfectants, whereas they receive deodorants. It would seem probable that an assistant in an oil-shop would not be so likely as a qualified pharmaceutical chemist to know the scientific value of a commodity he sells. The assistant or proprietor of a retail Italian warehouse might be liable to judge a disinfectant by its æsthetic properties, such as its smell or colour when mixed with water. The chemist, with his association with the medical profession, would be more willing to give credibility to the statements of members of the medical profession, the eminence and scientific qualifications of whom he would be more or less able to judge. Possibly, however, these disadvantages could be removed in time, at any rate, if the public is educated by disinterested scientists, including medical officers of health, who should be able to do much by enlightening those members of their health committees who desire information.

MEDICINE AND THE LAW.

Evidence as to the Time of Death in Murder Trials.

A CORRESPONDENT invites our attention to the important nature of the evidence expected from medical men in cases of death involving criminal charges, where the witness is asked to describe the condition of a dead body when he first saw it, and to state his conclusions as to how long previously death had taken place. Our correspondent further suggests that the text-books are less informing than they might be on the subject, and that an authoritative pronouncement could usefully be made upon the matter. He also points out the necessity for taking into account circumstances which vary in each particular case, but which are generally capable of being definitely ascertained. The subject is no doubt one of considerable interest owing to the fact that the evidence referred to is very frequently required in order to establish the guilt or innocence of a person accused of murder. To establish the time of death where a body has been found within a few hours is one thing, but it is quite another, and often even more important, where a long time has elapsed. The murderer Crippen would not have been convicted if the remains found under the kitchen floor of the house, which he had occupied, had been in a condition inconsistent with their having been placed there during his tenancy. The cases range, therefore, from such as his, to others of the nature of the Eastbourne murder referred to by our correspondent, where death had taken place within a few hours and the vital question was within how many. With regard, at all events, to occasions where the shorter time is involved, the collection of information of an authoritative description need not be difficult, and its publication would be of distinct service. It would imply that competent observers should avail themselves of such opportunities as many general hospitals could supply for watching the development of the various phenomena observable in dead bodies where violent or unnatural death has taken place. Record of surrounding conditions would be made, and would include the mode of death, physical details likely to affect post-mortem developments, and conditions of exposure, atmosphere, and temperature, to which the body was subjected. Contribution might further be made by those who have had such vast recent experience of the phenomena accompanying death upon the battlefield. The whole would have to be carefully collated and scrutinised, when it is quite possible that a monograph dealing with the subject suggested might prove a valuable contribution to forensic medicine, one of practical use to those who on rare occasions may be confronted by a duty lying outside the path of their daily experience.

Property in Bodily Organs.

In a recent number[1] of a Berlin medical paper Dr. Arthur Weil deals with certain practical and legal difficulties arising from the transplanting of sex glands according to Steinach's teaching of rejuvenation. The article suggests as the ideal the transplantation of healthy glands from normal relatives, if that were possible, and if not, the use of glands removed by operation on account of various morbid conditions, the difficulties of obtaining material being overcome by having a sort of exchange and mart in the surgical department of a large hospital. Apparently legal difficulty might arise in Germany in regard to the transplantation of a healthy testis, even with the consent of the donor, although not in the case of a gland removed on account of any medical reason. The proprietary right of the donor to any organ removed from him can in Germany pass over to the recipient by a mutual agreement, although no agreement is legally binding in regard to parts of the human body so long as they are still in organic continuity with it. The author suggests that the time-honoured practice of castration would be found to have some bearing on the legal position. In this country we are not aware that anything in the existing law would prevent a man agreeing to part with any portion of his body to another with or without consideration for so doing, or would prevent a surgeon from performing the required operation. The transfusion of blood affords a tolerably close parallel so far as questions of principle are involved. This, however, is not to be taken as any decision that public opinion would endorse such transfers as those suggested, either on the part of transferrer or transferee, or of the surgeon. We have here in mind the possibility that a wealthy man might desire to acquire the desired organ from a poor one. It is in such a case that odium would readily attach to the proceeding; where the transference was an act of self-sacrifice on the part of the transferrer it might be different. In any event the bargain to transfer would probably be held to be contrary to public policy, and could not be enforced in a court of law. Where the carrying out of such a bargain had for its result any injury not contemplated by one of the parties to it, the surgeon would find every effort made to attach responsibility to him, and a heavy weight of prejudice in the scales against him. In the second class of cases referred to, that of glands removed by operation on account of morbid conditions, it is suggested that transfer might take place through arrangements made by the surgeon and that in a hospital there might be organised a system by which the removed gland would be used for the benefit of another patient. Through such an exchange department in any large institution, the transferee would gain without the transferrer being aware of it, or at any rate without his knowing to whose welfare he had contributed. At the first glance this may appear practicable and not difficult to arrange. In such a system there would be no question of a man allowing himself to be mutilated for the sake of pecuniary gain, but the carrying of the transaction out would have to be subject to precautions in order to prevent serious scandal. There would always be a danger that the patient, whom we have called for convenience the transferrer, would complain that he had been operated on unnecessarily in order that someone else might gain thereby, or to enable the surgeon to enlarge his knowledge by an interesting experiment. Surgery does not indulge in secret remedies, so that the fact of such measures as those involved being in use would be generally known, and such trouble as might arise would find its way with every kind of exaggeration into the lay press. Accusations would be easy to make that would be difficult to disprove, and a charge of malpraxis might at any time be launched against a surgeon or a hospital to the serious detriment of either. There are occasions where the prudent are justified in waiting to profit by the experience of others.

[1] Berliner klin. Wochenschr., March 28th, 1921.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR APRIL, MAY, JUNE, JULY, 1920.

April.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Insoluble matter. Carbonaceous other than tar.	Insoluble matter. Ash.	Soluble matter. Loss on ignition.	Soluble matter. Ash.	Soluble matter. Total solids.	Included in soluble matter. Sulphate as (SO_3).	Included in soluble matter. Chlorine (Cl).	Included in soluble matter. Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	56	0·27	3·57	6·77	2·46	1·79	14·86	0·67	0·99	0·05
Archbishop's Park	67	0·15	1·96	2·32	1·94	4·52	10·88	2·47	0·75	0·15
Finsbury Park	76	0·14	1·41	3·76	1·52	4·78	11·62	0·99	0·81	0·11
Ravenscourt Pk.	74	0·28	2·48	6·05	2·52	5·17	16·52	2·39	0·99	0·29
Southwark Park	48	0·18	2·07	5·40	1·44	2·53	11·63	1·28	0·50	0·10
Victoria Park	75	0·15	1·70	3·59	0·90	2·60	8·94	0·96	0·99	0·12
Wandsworth Com.	55	0·12	0·84	2·29	1·36	2·87	7·48	1·31	0·65	0·14
Golden Lane	69	0·03	2·81	3·98	0·83	3·86	11·68	1·21	0·57	0·11
Birmingham—										
Central	100	0·18	3·39	10·12	1·64	4·99	20·32	2·68	0·66	0·15
Aston	106	0·12	2·19	5·16	1·69	5·35	14·51	1·96	0·53	0·08
South-Western	125	0·02	0·75	1·82	1·24	4·15	7·98	1·79	0·38	0·13
Kingston-upon-Hull	89	0·12	1·91	4·52	2·86	5·82	15·23	3·06	1·02	0·09
Malvern	115	—	0·20	0·23	0·33	0·77	1·56	0·33	0·07	0·02
Newcastle-on-Tyne	75	0·14	2·65	5·54	2·56	2·41	13·30	1·70	0·67	0·15
Rochdale	150	—	—	—	—	—	26·93	—	—	—
Rothamsted	88	—	0·45	0·54	1·76	1·03	3·77	—	—	—
St. Helens	109	0·33	6·12	12·12	1·91	3·56	24·04	1·61	1·31	0·02
Southport—										
Hesketh Park	102	0·05	0·44	0·44	2·55	3·19	6·67	0·70	1·42	0·04
Woodvale Moss	93	—	—	—	—	—	5·49	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park	32	0·02	1·27	2·41	1·01	1·27	5·98	0·53	0·44	0·05
Bellahouston Pk.	20	0·06	1·47	2·11	0·39	0·47	4·50	0·21	0·26	0·02
Blythswood Sq.	32	0·13	4·56	13·51	0·99	1·82	21·01	0·77	0·50	0·11
Botanic Gdns.	21	0·11	1·60	3·60	0·63	0·90	6·84	0·42	0·33	0·03
Queen's Park	34	0·04	0·90	2·12	0·68	0·84	4·58	0·41	0·39	0·12
Richmond Park	19	0·10	1·48	3·31	0·29	0·77	6·95	0·29	0·24	0·03
Ruchill Park	33	0·07	1·14	3·32	0·39	1·47	6·39	0·49	0·39	0·05
Tollcross Park	26	0·08	1·68	4·59	0·87	1·65	8·87	0·76	0·43	0·09
Victoria Park	34	0·08	3·67	2·13	0·56	1·18	7·62	0·43	0·46	0·07
Stirling	58	0·05	0·81	1·08	1·13	1·89	4·96	0·48	0·08	0·07

May.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Insoluble matter. Carbonaceous other than tar.	Insoluble matter. Ash.	Soluble matter. Loss on ignition.	Soluble matter. Ash.	Soluble matter. Total solids.	Included in soluble matter. Sulphate as (SO_3).	Included in soluble matter. Chlorine (Cl).	Included in soluble matter. Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	19	0·77	4·28	4·50	2·12	1·45	13·12	0·43	1·18	0·03
Archbishop's Park	14	0·16	2·79	4·88	1·20	2·29	11·32	0·77	0·67	0·05
Finsbury Park	19	0·10	1·28	5·62	1·14	1·55	9·69	0·45	0·77	0·05
Ravenscourt Park	50	0·22	1·30	3·92	1·09	2·11	8·64	0·79	0·71	0·11
Southwark Park	14	0·12	1·99	5·26	1·02	2·07	10·46	0·74	0·59	0·08
Victoria Park	12	0·07	1·11	3·83	1·02	1·32	7·31	0·30	0·74	0·03
Wandsworth Com.	13	0·13	1·10	2·97	0·84	1·64	6·69	0·58	0·65	0·05
Golden Lane	12	0·02	2·15	3·29	0·79	1·83	8·09	0·51	0·41	0·10
Birmingham—										
Central	65	0·11	3·94	13·23	1·45	3·41	22·14	1·59	0·30	0·19
Aston	—	—	—	—	—	—	—	—	—	—
South-Western	69	0·02	0·97	2·76	1·11	2·55	7·41	0·99	0·14	0·12
Kingston-upon-Hull	60	0·07	1·42	5·54	1·61	5·84	14·39	2·06	0·72	0·07
Malvern	44	—	0·18	0·23	0·36	0·59	1·36	0·36	0·05	0·01
Newcastle-on-Tyne	74	0·29	7·80	19·25	1·77	4·29	33·40	1·90	0·94	0·18
Rochdale*	154	—	Ti.:	7·12	Ts.:	4·76	11·88	—	—	—
Rothamsted	—	—	—	—	—	—	—	—	—	—
St. Helens	132	0·27	0·68	1·38	1·32	18·49	22·14	9·11	2·38	0·02
Southport—										
Hesketh Park	95	0·02	0·68	0·96	0·47	5·22	7·33	0·97	2·17	0·09
Woodvale Moss	39	—	—	—	—	—	4·91	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park	114	0·05	4·72	1·73	1·02	2·73	10·25	1·04	2·18	0·16
Bellahouston Pk.	94	0·06	2·03	2·68	2·78	3·84	11·39	0·94	3·16	0·14
Blythswood Sq.	121	0·19	3·45	6·18	3·30	4·79	17·91	1·85	3·39	0·20
Botanic Gdns.	84	0·16	2·72	6·73	2·89	3·13	15·63	0·98	3·16	0·11
Queen's Park	114	0·08	2·57	5·01	2·53	3·88	14·07	1·17	2·41	1·82
Richmond Park	128	0·06	1·35	2·92	1·69	3·04	9·06	0·90	2·85	0·18
Ruchill Park	122	0·08	2·50	4·84	1·64	2·96	12·02	1·45	2·58	0·17
Tollcross Park	114	0·15	2·05	5·25	1·97	3·51	12·93	1·00	3·12	1·82
Victoria Park	126	0·06	2·13	4·96	1·59	3·68	12·42	0·99	0·28	0·16

June.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Insoluble matter. Carbonaceous other than tar.	Insoluble matter. Ash.	Soluble matter. Loss on ignition.	Soluble matter. Ash.	Soluble matter. Total solids.	Included in soluble matter. Sulphate as (SO_3).	Included in soluble matter. Chlorine (Cl).	Included in soluble matter. Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	45	0·51	5·58	3·68	3·05	2·88	15·71	0·76	1·37	0·04
Archbishop's Park	33	0·11	2·87	6·84	2·18	3·38	15·38	0·32	1·66	0·06
Finsbury Park	43	0·11	1·47	4·49	2·29	2·26	10·61	0·45	1·57	0·08
Ravenscourt Pk.	42	0·10	1·50	4·30	1·70	2·65	10·25	0·39	1·55	0·08
Southwark Park	39	0·03	3·21	5·04	1·57	2·24	12·09	0·67	1·35	0·10
Victoria Park	36	0·05	2·05	4·25	2·10	2·40	10·86	0·39	1·70	0·09
Wandsworth Com.	38	0·06	1·79	1·81	1·49	1·65	6·80	0·38	1·07	0·06
Golden Lane	40	0·04	2·82	3·66	1·61	2·73	10·86	0·70	1·65	0·22
Birmingham—										
Central	74	0·24	5·20	13·95	1·32	4·16	24·87	2·98	0·37	0·16
Aston	—	—	—	—	—	—	—	—	—	—
South-Western	64	0·02	0·83	2·22	0·97	2·43	6·47	1·32	0·06	0·09
Kingston-upon-Hull	30	0·03	1·19	5·75	1·35	3·36	11·68	1·45	0·55	0·04
Malvern	72	—	0·20	0·36	0·36	1·23	2·15	0·33	0·15	0·01
Newcastle-on-Tyne	18	0·27	4·45	9·72	1·60	2·32	18·36	0·75	0·73	0·05
Rochdale*	71	—	Ti.:	7·12	Ts.:	4·76	11·88	—	—	—
Rothamsted	48	—	0·58	0·79	1·05	1·60	4·02	—	—	—
St. Helens	90	0·08	1·39	1·81	1·35	3·63	8·26	1·66	0·83	0·06
Southport—										
Hesketh Park	68	0·04	0·82	0·96	2·05	3·58	7·45	0·81	2·05	0·07
Woodvale Moss	78	—	—	—	—	—	8·51	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park	31	0·31	2·61	8·29	1·18	1·49	13·88	0·79	0·66	0·11
Bellahouston Pk.	56	0·07	0·78	1·29	1·62	2·75	6·51	0·66	1·13	0·10
Blythswood Sq.	46	0·31	3·01	6·27	2·62	3·34	15·45	1·15	1·21	0·18
Botanic Gdns.	50	0·30	1·93	5·32	2·10	3·40	13·05	0·93	1·18	0·19
Queen's Park	58	0·27	1·12	2·73	0·56	2·61	7·33	0·87	1·31	0·11
Richmond Park	33	0·30	2·06	4·28	1·32	1·72	9·68	0·58	0·75	0·13
Ruchill Park	45	0·04	1·69	3·49	1·65	2·05	8·92	0·89	5·89	0·14
Tollcross Park	34	0·20	1·85	4·84	1·95	1·88	10·72	0·57	1·13	0·13
Victoria Park	70	0·11	1·29	3·48	1·05	3·15	9·08	0·81	1·16	0·11

July.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Insoluble matter. Carbonaceous other than tar.	Insoluble matter. Ash.	Soluble matter. Loss on ignition.	Soluble matter. Ash.	Soluble matter. Total solids.	Included in soluble matter. Sulphate as (SO_3).	Included in soluble matter. Chlorine (Cl).	Included in soluble matter. Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	94	0·26	1·98	2·93	5·64	7·52	18·33	2·72	2·00	nil.
Archbishop's Park	88	0·18	3·46	4·98	0·93	3·37	12·93	1·23	1·80	0·11
Finsbury Park†	—	—	—	—	—	—	—	—	—	—
Ravenscourt Pk.	91	0·20	1·60	2·96	2·33	2·45	9·55	0·60	2·21	0·16
Southwark Park	85	0·06	2·11	5·51	2·00	3·67	13·04	0·93	2·21	0·12
Victoria Park	85	0·10	1·96	3·45	3·07	3·65	12·23	0·69	2·07	0·17
Wandsworth Com.	72	0·28	1·87	2·64	3·39	4·42	12·60	1·16	2·47	0·15
Golden Lane	79	0·04	3·51	4·30	1·26	4·73	13·82	1·41	2·07	0·22
Birmingham—										
Central	90	0·13	5·26	13·43	2·11	4·22	25·15	2·40	0·45	0·14
Aston	94	0·10	2·82	10·74	1·60	3·58	18·84	1·90	0·38	0·06
South-Western	102	0·02	0·78	1·35	0·93	2·54	5·62	1·32	0·41	0·10
Kingston-upon-Hull	79	0·08	2·04	4·72	2·30	6·75	15·89	2·62	0·85	0·13
Malvern	105	—	0·18	0·25	0·43	1·75	2·61	0·46	0·12	0·02
Newcastle-on-Tyne	79	0·50	2·82	6·14	1·58	3·01	14·05	1·17	0·76	0·16
Rochdale*	244	—	Ti.:	24·38	Ts.:	12·59	36·97	—	—	—
Rothampsted	117	—	0·65	1·52	1·41	2·09	5·67	—	—	—
St. Helens	114	0·03	1·75	4·46	2·28	3·42	11·94	1·96	0·68	0·09
Southport—										
Hesketh Park	124	0·08	0·51	0·59	3·41	6·50	11·09	0·98	2·23	0·05
Woodvale Moss	115	—	—	—	—	—	9·52	—	—	—
Liverpool	168	0·18	2·82	6·05	2·41	6·91	18·37	4·78	0·59	0·20
SCOTLAND.										
Glasgow—										
Alexandra Park	74	0·03	1·87	3·09	1·77	2·88	9·64	0·81	3·04	0·14
Bellahouston Pk.	73	0·10	0·85	1·22	2·03	4·15	8·35	1·02	3·08	0·05
Blythswood Sq.	112	0·17	2·76	5·22	2·69	5·38	16·22	1·61	3·59	0·23
Botanic Gdns.	86	0·29	2·85	7·04	3·61	4·21	18·00	1·00	3·06	0·05
Queen's Park	67	0·27	1·59	2·67	2·40	3·53	10·46	0·82	2·98	0·11
Richmond Park	70	0·13	1·88	3·62	1·89	3·36	10·88	0·72	4·32	0·17
Ruchill Park	93	0·09	1·81	2·26	1·95	3·80	8·91	0·89	5·89	0·14
Tollcross Park	80	0·63	2·97	6·99	1·75	5·52	17·86	1·06	2·91	0·11
Victoria Park	31	0·06	1·03	1·95	0·84	1·86	5·74	0·53	1·19	0·06

* Rochdale figures are average for May and June. Ti. = Total insoluble. Ts. = Total soluble. † Bottle broken.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) 1 g. per sq. metre; (*d*) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office were made in THE LANCET Laboratory.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Reciprocity of Medical Diplomas Between Austria and Czecho-Slovakia.

AFTER protracted negotiations an understanding has been arrived at between the Governments of Austria and Czecho-Slovakia which settles some of the numerous misunderstandings arising out of the disruption of former university links. There is now mutual recognition, between the republics, of the validity of medical degrees and diplomas obtained before Nov. 1st, 1918, at any of the universities now belonging to either State. These diplomas entitle their holder to practise in the numerous health resorts of the two countries (Carlsbad, Marienbad, Franzensbad, Hall, Baden Pistyan, Ischl, &c.). Furthermore, such diplomas are necessary for doctors who wish to practise in the hospitals and medical institutes of either country, but are not valid for regular medical practice outside these institutions or in other places than health resorts. Holders of diplomas obtained after that date must apply for permission if they wish to practise outside their own country, but this permission will be granted on very liberal conditions. In the frontier districts, where the population is very much mixed, doctors of either nationality may be consulted.

Increase of the Numbers of Out-patients in Hospitals.

Although the reports of the Board of Health show the health of Vienna to be improving, the numbers of out-patients in the ambulatories is constantly increasing. It is true that during the last few months of the war the conditions were still worse, but even so they are now most appalling. The lack of beds in hospitals prompts many patients to turn to the out-patient departments for help, where they are admitted only if they produce a certificate proving them to be paupers. Hundreds of such persons flock daily to the clinics. Labourers and factory hands were formerly the most frequent attenders in these crowds, but now they have disappeared, and the former middle-classes predominate, as they cannot afford to pay the private doctor's fee, and do not belong to a sick club. The ambulatories most frequented are those for diseases of women and children and for venereal diseases; the ophthalmologic clinics are also overcrowded at present; in the departments for children's diseases the number of babies and infants is markedly less than a few years ago—the result of war and the time of so-called peace.

Serious Position of Dental Practitioners: Medical Strike in Styria.

Within the last few weeks the medical profession has been considerably alarmed by the attitude of the Government towards a problem which was thought to have been definitely settled some time ago. As pointed out in a previous letter (vide THE LANCET, March 26th, p. 664) relations between the dental surgeons and the dental mechanics had become very strained; the mechanics demanded the right to perform minor surgical operations, including extraction of teeth. Whilst the doctors refused to admit such a right, the Government offered its services as mediator, and an understanding was arrived at. A Bill was drafted, to be brought before the National Assembly, which permitted the present practising mechanics to perform minor operations—e.g., lancing an abscess or filling teeth, but not extraction or other more highly technical procedures. In future, however, no new licence for the practise of dentistry was to be granted to the dental mechanic. But the matter has now assumed a different aspect: the leaders of the dental mechanics' union refused to accept this undertaking, and bought about a strike of mechanics employed by dental surgeons, whilst they themselves continued working for the public as formerly. They succeeded in bringing the present Government over to their side, and in spite of all protests from the medical profession a Bill was carried in the National Assembly giving dental mechanics practically the same rights as those pertaining to fully qualified doctors of medicine. It is true that the Bill provides for an examination to be passed by future mechanics before they may practise on human beings; the examination is to comprise anatomy, biology, pathology, and physiology of the mouth and teeth; but this measure of protection is regarded by dental surgeons as a farce. There will thus be two kinds of dentists in Austria—fully qualified doctors of medicine with six to eight years of hard scientific study behind them, and mechanics uneducated in general medicine, the latter having equal rights with the former, and being permitted by law to meddle in surgical contingencies with which they may not be competent to deal. This breach of the hitherto strictly observed law that no lay person shall be permitted to treat pathological conditions of the human body has naturally aroused great indignation amongst medical men; many suggestions have been made as to means of rendering protest effective, including the unpopular proposal of a medical strike. In Styria the doctors at once refused to coöperate with the local boards and Government officers in all public health affairs. Notification of disease, coroners' work, and inspection of meat and cattle have been refused. In Vienna, the medical organisation has taken up the challenge too; and the Medical Council is acting on the same lines, having, for instance, refused to give its opinion on the draft of the new law now under consideration, dealing with hospitals and charity institutions. All circles of the profession are unanimous in opposing the attitude of the Government, which is regarded as promoting a revival of medical quackery. The profession is not opposed to legislative reforms to improve the present relations between the hostile groups, but it refuses to be excluded in the process of settling such vital problems, especially after an agreement had been arrived at previously.

Contract Practice for Persons Employed by the State.

An experiment, conducted on a large scale from the outset, which may now be stated to have proved successful, has shown that the needs of the profession and the public may be easily reconciled with each other. In an agreement signed at the end of January, the State and the medical organisation have established a compulsory sick club for all State officials throughout the country. These officials number about 150,000; their wives and children are accorded the same rights in the club, together with the 25,000 State pensioners; the number of persons thus insured against illness amounts in all to over 400,000. The difference between this sick club and the other krankenkassen is the rate of payment. Members of the latter pay a certain monthly salary to their doctor, whatever his work be. The State sick club pays a fixed fee for each consultation or call. Any practitioner desiring to work under this contract is admitted to the test of doctors; the patient may select any one from this list he likes. If he chooses a man living away from his district he must pay an excess or "distance" fee, but gets refunded so much, as the doctor is entitled to charge in his own district only, according to the contract. As a rule the doctor gets 34 kronen for a first examination and for the subsequent consultations half that fee. For a call at the patient's home twice as much is charged; for a night call 100 per cent. more is added. Special services are paid at the rate of one to four points extra, each point being 10 kronen; for instance, the application of an extensive bandage, a hypodermic injection, a splint, a catheter, &c. Specialists can be consulted only if the general practitioner so desires. Their fees are much higher—100 kronen first examination, 50 kronen for subsequent consultations. Here, also, calls at the patient's house are 100 per cent. higher, night calls and extra work not involved in the regular examination are paid in addition. The doctor is entitled to charge an extra "distance" fee if called to a patient outside of his district, but this the patient must find out of his own pocket. As regards the funds of the State sick clubs, these are raised by regular contributions by the insured persons and the State. The State officials pay 1½ per cent. of their salary towards this fund, and an equal sum is paid by the

State. The result of these payments is calculated at 60,000,000 kronen a year, sufficient to pay 400 kronen a year for the illness of 150,000 members—figures obtained from the experiences of other sickness insurance clubs. The understanding was arrived at for a period of three months, subject to rearrangements as general conditions might require. It was found to be working very satisfactorily for both parties; it was therefore renewed on May 1st, the fees being increased by mutual understanding, for the period of the next three months, thus reaching about 50–60 per cent. of the fees of general private practice.

Discovery of a Warm Iodine Spring in Austria.

Thermal water, highly charged with iodine, has recently been discovered in Upper Austria, not far from Linz, coming up a shaft more than 1500 feet deep. The temperature of the water is 36° C. (97° F.), this being by far the hottest of all thermal iodine waters in Europe. The owner of the springs did not know the value of the waters, and refused to hand his well over for public use. Thereupon the Local Government Board applied to the Ministry of Public Health, and the existence of this valuable spa only then became known to the latter body. Expropriation has been contemplated, as the owner will not admit that the community is entitled to the benefits of this rare natural gift. Hitherto the strongest iodine waters were those at Hall, also in Upper Austria; the latter have a temperature of only 11° C. (52° F.) and are extensively used both in the drinking cure and in the shape of "Hall iodine salt." Since the war the combined treatment with salvarsan and iodine baths in Hall has been very much recommended in this country for syphilitic disease of the tertiary stage, and medical circles expect even better results from the new thermal waters, the capacity of which is over 60 litres (15 gallons) per second.

May 4th.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Food Adulteration and Preservation.

Dr. Constantinescu, chemical analyst at the Department of Agriculture, read a paper at the Medical Club of Cluj on the above subject. He said that the necessity of preserving food in some way had been recognised since man emerged from his uncultured state. The development of the science of chemistry had placed in the hands of the manufacturer means before unknown of preserving foods, but also of matching them in colours simulating quality. He believed the education of the public in the artificial colouring of foods to be quite as effective as legislation. After April 20th he said the food law would require that all food products entering or leaving this country (meat conserves, vegetable conserves for the army), should, if artificially coloured, bear a label with a statement to that effect. No colouring material need be declared, excepting only sulphate of copper. His advice to food makers was to cease using colours, especially if the colouring matter is under suspicion of any kind. He considered that antiseptics should never be put into foods, except when absolutely necessary, unless the consumer orders them himself, but in his opinion it is legitimate to use salicylic, boric, and sulphurous acid (the last in infinitesimal doses), as employed in the fumigation of dried fruits, and the burning of the sulphur linen in wine barrels, a method which has come down from antiquity. When, as at the present time, it is employed in enormous quantities for preserving a poor vintage and for placing wine on the market before it is properly matured, he declared its use to be unpardonable.

Medical Sociology.

A society for the study of questions of social medicine and hygiene and medical statistics was formally constituted in Bucharest on April 9th at a meeting attended by a number of medical practitioners, political economists, and sociologists. The membership of the new society amounts to 31, and includes medical practitioners, official statisticians, and persons interested in social welfare.

Neglected Physical Signs in Diseases of the Chest.

Dr. Riemer calls attention to several physical signs first described by Dr. A. Grober in Germany, the presence of which he considers to be of some importance, in the diagnosis of intrathoracic diseases, with information gained by fluoroscopy. It is but little known, for instance, that difference in the size of the pupils is a common symptom of apex tuberculosis. The pupil of the affected side is generally wider, since the sympathetic nerve is irritated by the inflamed pleura. Another valuable sign is the behaviour of the veins of the chest if an expiratory effort is made with closed glottis as in Valsalva's method. Normally the vessels on both sides swell equally, but with tumours, aneurysms, &c., the veins affected by the compression will be more prominent. Normally, the pupils contract somewhat during expiration and dilate slightly with inspiration; with Valsalva's method there is a gradual, slight dilatation during the deep inspiration preceding the expiratory effort, and a gradual slight contraction during the latter. In disease the following variations occur: (1) Only one pupil will show normal contraction; the other will dilate, and on the side of the latter pathological lesions of definite localisation will be found in the thorax. (2) If both pupils dilate instead of contracting during forced expiration, the disease is bilateral. (3) If there is a difference in the size of the pupils during normal respiration and the dilated pupil widens still more during Valsalva's experiment, while the contracted one becomes normal, intrathoracic disease on the side of the wide pupil is probable. (4) If the pupils differ in size with quiet respiration, but dilate with Valsalva's method, bilateral intrathoracic affection is probable. If the smaller pupil becomes equal to or larger than the other one, the disease probably also affects both sides, if local disease or organic disease of the nervous system can be excluded. Absence of all these phenomena does not argue against intrathoracic disease; the percussion note obtained over the manubrium sterni is here of the greatest value. In new growth or inflammatory tumour of the mediastinum there will often be dullness with closed mouth and tympanitic resonance with open mouth, or tympanitic resonance with closed mouth and Wintrich's change of percussion with open mouth.

New Regulations to Prevent the Spread of Infectious Diseases.

For the Bill recently introduced by the Sanitary Board of Roumania the chief sanitarian has now substituted another, which not only gives authorities power to control persons suffering from acute infectious diseases, but also gives them sanitary control of the premises where such diseases exist. The Bill also confers powers for the regulation of burial of bodies of persons who have died of acute infectious diseases, and fixes fines and penalties for non-compliance with the rules made. It stipulates that the rules shall cover the following: (1) Reports from physicians; (2) quarantine and disinfection; (3) treatment of infected bedding and clothing; (4) care and burial of the dead in cases of contagious disease; (5) disinfection of conveyances; (6) admission and attendance of persons at public or private schools, asylums, hospitals, and compulsory vaccination and revaccination; (7) erection of a typhoid station, where patients convalescent after typhoid (typhoid-carriers) will be examined fortnightly for three months.

Death-rate in 1920.

The State Statistical Bureau, in its annual report, finds that, estimated by the death-rate from all causes, the sanitary condition of the Roumanian State (old Kingdom) for 1920 was unsatisfactory. There were 128,564 deaths reported, which is largely in excess of previous records. The annual average mortality for the past 20 years, including 1920, is 120,000. Of epidemic diseases, cerebro-spinal fever and measles alone have shown any material increase. There was an outbreak of the latter disease in several parts of the kingdom, beginning

in March and continuing for several months. Typhoid was also responsible for many deaths; in Moldavia, the eastern part of the Old Roumania, the mortality from this cause was nearly double that of 1919. The chief cause for increase in mortality of 1920, however, has been pneumonia, with 13,500 deaths, against 11,470 in the preceding year. These figures were nearly reached in the worst influenza years (1917–18 and 1891–93). There were over 11,000 deaths from consumption; this figure also exceeds that of any previous year.

COUNCIL OF BRITISH OPHTHALMOLOGISTS: ANNUAL REPORT.

THE Council of British Ophthalmologists presented its annual report for 1920–21 to a meeting of ophthalmologists held on May 7th at the Royal Society of Medicine. The report opened with a record of appointments made at the first meeting of the session. Mr. J. B. Lawford was elected President in place of Sir Anderson Critchett; Sir George Berry and Mr. E. Treacher Collins were elected Vice-Presidents; Mr. J. Herbert Fisher, hon. treasurer; and Mr. Leslie Paton, hon. secretary. The following members were elected on the Executive Committee: Messrs. Fisher, Collins, Parsons, and Mayou, with the President and Secretary ex officiis.

In 1919 the Council issued a report dealing with the training and examination of ophthalmic surgeons; it was noted with approval that the following special examinations in ophthalmology have recently been established: M.S. London (Ophthalmology); M.S. Victoria University, Manchester (Ophthalmology); D.O.M.S. Conjoint Board, R.C.P. Lond. and R.C.S. Eng.; also that at the present time a committee of the Royal College of Surgeons of England is considering the question of creating a higher form of diploma in connexion with the Fellowship of the College. During the session the Council issued a report on the need for institutional treatment of children with contagious eye disease, which was forwarded to the Ministry of Health. As a result of this action beds are now available at the Metropolitan Asylums Board Ophthalmia School at Swanley for the treatment of London school children suffering from ophthalmia or other contagious diseases of the eye.

The Council has considered the question of sight-testing by opticians, and has prepared and approved a report on the subject. It is not proposed to publish this report at present. The Council has also prepared a report on the notation of cylinder axes, and still has under consideration the question of the standardisation of test types. A member of the Council has been appointed to serve on a joint committee consisting of representatives from the Illuminating Engineering Society, the Research Association of British and Allied Manufacturers, the British Scientific Instrument Research Association, the Institution of Automobile Engineers, the Commercial Motor Users Association, and the Electric Lamp Manufacturers Association of Great Britain, Ltd., on "Glare from Motor Car Head-lights."

The Council agreed to appoint a committee to consider the question of injuries to eyesight resulting from the use of strong lights in cinema studios, but as the Minister of Health referred the matter to the Departmental Committee on the "Causes and Prevention of Blindness," it was decided not to take any immediate action. An interim report of the Committee on "Eyestrain in Cinemas," on which the Council has four representatives serving, has been issued.[1] A committee has been appointed to consider the report of the Consultative Council of the Ministry of Health, in so far as it is likely to affect ophthalmic surgeons. This committee has already gathered a considerable amount of information as to the work done by ophthalmic surgeons for various public and State authorities. Another committee is considering the question of examination, treatment, and report of cases referred by public authorities to ophthalmic surgeons in voluntary hospitals.

[1] THE LANCET, 1920, ii., p. 565.

Obituary.

GEORGE BLUNDELL LONGSTAFF, M.D., D.P.H. OXON., F.R.C.P. LOND., F.G.S., F.L.S.

Dr. G. B. Longstaff died at his residence, Putney Heath, on May 7th, aged 72. The son of the late Dr. George Dixon Longstaff, of Wandsworth, he was educated at Rugby, at New College, Oxford, where he took a first-class in natural science, and at St. Thomas's Hospital, London, where he won the Mead medal. Graduating at Oxford in 1872, he proceeded to the M.A., M.B. in 1876, and to the M.D. in 1891. He became a Member of the Royal College of Physicians of London in 1877, the Fellowship being conferred on him in 1888. Dr. Longstaff devoted much time to municipal and philanthropic work. He represented Wandsworth on the London County Council from 1889 to 1903, and as chairman of the Building Act Committee took an active part in promoting and passing through Parliament the London Building Act of 1894. He was a Vice-President of the Royal Entomological Society and of the Royal Statistical Society, and was the author of "Butterfly Hunting in Many Lands." His smaller publications included articles on "The Geographical Distribution of Diphtheria"; Studies in Statistics: Social, Political, and Medical"; "Rural Depopulation"; and "A Contribution to the Ætiology of Rheumatic Fever." Dr. Longstaff was a born traveller, and his medical training added greatly to his interest in life and to his public usefulness. He never practised.

EDWARD WARD, M.B., CH.B. CAMB., F.R.C.S. ENG. (HON. CAUSÂ.),

CONSULTING SURGEON, LEEDS GENERAL INFIRMARY.

Mr. Edward Ward, who was very well known as a surgeon in the North of England, died at Leeds on April 30th. He received his early education in Leeds, afterwards entering Trinity College, Cambridge, with the intention of studying for the law. He graduated B.A. in 1876, but on the death of his father decided to take up a medical career, and became a student at the Leeds Medical School, from which he qualified in 1881, following this up with the M.B., B.Ch. three years later. He then became resident surgical officer at Leeds General Infirmary, ascending the scale until he finally became consulting surgeon. The Royal College of Surgeons of England conferred upon him the honorary diploma of Fellow in 1904. Five years after he asked to be relieved from active duties at the Infirmary, the board putting on record their appreciation of a service extending over nearly 20 years. Mr. Ward occupied for a time the chair of surgery at Leeds University, and examined in surgery at the University of Cambridge. He also presided over the Leeds and West Riding Medico-Chirurgical Society. His sympathy and gentleness earned him abundantly the confidence and esteem of patients, and his professional colleagues knew the real worth behind a singularly unassuming manner. He had been in failing health for some years before his death.

THOMAS EDWARD HONEY, M.D. DURH., M.R.C.S., L.R.C.P. LOND.

Thomas Edward Honey, who died at his residence, Shutta, East Looe, on April 30th, was born in Devonport and received his medical education at St. Mary's, from which he took the M.R.C.S., L.R.C.P. Lond. in 1886 and the M.D. Durh. He practised for a short time in Devonport and became surgeon of the Provident Dispensary, Royal Albert Hospital; he subsequently entered the navy and retired as staff surgeon. During the war he offered his services to the Marylebone Infirmary, which, owing to the neighbouring infirmaries being reserved for the wounded, took in also the patients from Hampstead, Paddington, and Hammersmith. Dr. Basil Hood, medical superintendent to the infirmary, writes of him: "Dr. Honey volunteered to replace one of our yonnger medical officers who was joining up. He was then over 50 and had for some years retired to the country, which his soul loved. He stayed with us just over three years, much longer that he should have done had he considered his own

health, in order to allow a colleague a rest. He was a model of conscientious care and attention, besides finding time to spend many an hour in kindly yarning with the old bedrid and helpless patients. But the strenuous work under difficult conditions undoubtedly aged him. The visiting committee, staff and patients all parted from him with keen regret." His death followed ten days after an attack of hemiplegia.

The Services.

THE MEDICAL SERVICE OF THE DEFENCE FORCE.

THE threat of a general strike with the possibility of lawlessness and disorder finding their opportunity in those affected by unemployment and privation called into existence a Defence Force of Loyal Citizens, and for the time this force remains in being, mobilised and equipped for the defence of the community. For any such body of men a medical service is necessary from the beginning, to deal with the sick and with the minor accidents and injuries resulting from training, while should the Force unfortunately be called on to act, an organised medical service will be valuable, not only for the Force and those with whom it comes in conflict, but for such civilians as involuntarily become involved in the area of strife. The Force is organised on the basis of army divisions and each division has the usual medical services, though on a modified scale. In addition to the regimental medical officers each division has three field ambulances (of two sections instead of three) and a sanitary section. The field ambulance is a mobile unit with mechanical transport and motor ambulances; and its two sections are equipped for the first aid, feeding, and temporary nursing of 100 men and for any necessary urgent operations. It has tentage on a small scale, but in this country suitable buildings of some kind would usually be available and would be used—their advantages are no longer outweighed, as in the war, by their conspicuous attractiveness for high explosives.

The Royal Army Medical Corps on many occasions in the past has provided equipment for 100 cases, and has attended to many times that number of sick. In any grave emergency in this country the personnel of the bearer squads would certainly be augmented by willing and expert helpers, in gathering patients from dangerous localities, and in evacuating buildings on fire, carrying the injured into safety or to receiving posts and dressing stations. As regards the medical establishments of the rear—casualty clearing stations and base hospitals—the Defence Force will depend on the excellent military and civil hospitals of the country. In some areas the military hospitals are at present acting as field ambulance hospitals for minor sick, and as clearing stations for more serious cases which are transferred to the nearest suitable civil hospitals. In other areas where no military hospital is available the divisional medical services evacuate the sick direct to the civil hospitals. No doubt in case of emergency the great voluntary and public hospitals would be able to expand their services as far as required, while their staffs include many with expert knowledge, both of the immediate and late surgery of military injuries. Many civil hospitals at the present moment have lessened their activities to conserve their coal and other supplies to enable them to continue, in case of a long-drawn-out struggle, to deal with urgent medical and surgical cases among the civil population in their areas, and in consequence a fair proportion of normal accommodation is vacant. Should this unfortunately be inadequate in any locality, most civil hospitals are generous in their allotment of floor space per patient, when judged from the standpoint of a casualty clearing station, and the accommodation would, no doubt, be expanded in crisis by obtaining beds and bedding from local resources, and by enlarging their staffs from the medical practitioners and volunteers, male or female, of the neighbourhood who have served in hospitals during the war. These from previous training could at once—and adequately—fill gaps in the organisation.

The personnel of the existing field ambulances of the Defence Force is composed very largely of ex-members of the R.A.M.C. with war experience. With these there are others, who have training in first aid and R.A.M.C. duties in the Territorial Army, and some medical students; some business men and shopkeepers, though without any experience, have come forward, and while learning their stretcher drill and first aid will probably in the end find employment as clerks or storemen. Others have experience of active service as fighting troops, and give the impression that they would prefer to be with their old arm, but that they might come into collision with some whom they know and like (though deploring their lack of clear vision in the present crisis). These men, I think, would be foremost to rescue in a real place of danger. With experienced N.C.O.'s and with so large a proportion of trained men the administrative sections have been efficient from the start (and their technical equipment, medical and nursing stores, and cookhouse requisites were available almost at once), while the new men rapidly grasped the principles of drill, stretcher duties, and first aid, aided by the examples and instructions of the veterans of France, Far East, and Russia.

At first the men, unless in possession of their old uniforms, wore civilian dress with brassards, but after technical stores were issued, uniform and necessaries were soon provided, and now all are complete down to cap badges and shoulder titles. To a large number of men the opportunity is welcome from their individual point of view, however much they must regret the general troubles which have led to the institution of the Force. Medical officers who served abroad have had a sad chance of realising how many of the old men whom they led in far-off campaigns have never been able to gain regular employment. Regular food, decent clothes, and freedom from worry about their families, even for a time, have done wonders for many of these men in the short time implied. But officers for the Force may be a difficulty. In many cases assiduous attention since their return has restored to practitioners their livelihood and removed the blight sustained in 1914 to 1919, but another absence, even short, might be serious; still less are they inclined to leave who have had to plant afresh. In consequence the Defence Force in some cases will be very short of medical officers. Under present circumstances local practitioners on a part-time basis are looking after the men of the battalions and in a large measure compensate for the deficiency; while in the medical units there is at present no call for the full staff, though lectures by medical men would supply finishing touches to the instructions of N.C.O.'s in nursing and first aid. In many units, however, a number of ex-Service officers who cannot at present see their way clear to leave their practices, pensions board, and other appointments, have registered their names as willing to be called up should any crisis develop, and no doubt have overhauled their uniform and their valises and made arrangements for neighbours to carry on their work should the call come. There are still vacancies, and any medical man able to register as willing to be called up if grave developments ensue should approach the nearest military depôt (Territorial or Regular) and make inquiries. If the unit approached does not require a medical officer they would direct him to the headquarters of the Assistant Director of Medical Services of the division or the nearest field ambulance, which would be able to give all particulars. His services might be utilised at first as civilian medical practitioner on a part-time basis attending the sick of a combatant unit in his neighbourhood.

Medical officers with previous service as such as a rule receive a temporary commission to the rank they received on retirement; those who have not previously served are gazetted as lieutenant. While employed they receive pay and allowances of their rank. Civil medical practitioners on a part-time basis are paid pro rata. At present recruiting, both of officers and men, is suspended, but future developments might lead to its reopening.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

The annual general meeting of the above Funds was held on April 29th at 11, Chandos-street, Cavendish-square, London, Sir John Goodwin in the chair. The hon. secretary, Sir William Hale-White, submitted the annual report, which showed that grants had been made in the benevolent branch to 27 widows and in the relief branch to 76 widows. The amount distributed in the benevolent branch was £1778 and in the relief branch £2613. Two new trustees were appointed, Col. Ewen Maclean and Mr. Martin Holt. The hon. treasurer submitted a satisfactory financial statement. £2064 was received in subscriptions and donations for the benevolent branch and interest amounted to £631; for the relief branch £2617 was received in subscriptions and donations and £815 from interest. Sir John Goodwin was re-elected President, Sir John Bland-Sutton was appointed to fill the vacancy among Vice-Presidents, and the following were elected members of the council: Col. W. H. Willcox, Col. C. R. Evans, Col. Donald Armour, Col. Joseph Griffiths. These Funds were instituted by Lieut.-Gen. Sir Alfred Keogh, G.C.B., late Director-General of the Army Medical Service, for the benefit of the orphans of the commissioned officers and the children of those severely disabled who served during the Great War and to give relief to the widows and orphans of the rank and file who were killed in action or died of wounds or illness contracted in the service of the three auxiliary branches of the R.A.M.C.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Lieut. A. McCallum is transferred to Royal Canadian Navy.

ROYAL ARMY MEDICAL CORPS.

To be temporary Majors: J. E. Bates and P. McK. Terry. To be temporary Captains: W. R. Watt and E. E. Elliott. To be temporary Lieutenant: G. J. Scale.

Officers relinquishing their commissions:—Temp. Capt. (acting Major) A. G. Macdonald is granted the rank of Major. Temporary Captains retaining the rank of Captain: W. B. Gourlay and R. W. Collum. Temp. Hon. Capt. B. D. Brooker retains the honorary rank of Captain.

ARMY DENTAL CORPS.

Capt. T. K. Place, Dental Surgeon, late Special List, to be Captain.

DEFENCE FORCE.

To be temporary Majors: A. G. Reid, A. Robertson, and F. Ward. To be temporary Captains: W. A. Jackman, H. Mather, J. A. Mathers, G. M. Campbell, C. H. Vernon, K. Pretty, and H. G. Greaves.

2nd East Anglian Field Ambulance (D.F.).—To be temporary Major: S. J. Fielding.

1st (West Lancs.) Field Ambulance (D.F.).—To be temporary Major: F. W. B. Young.

1st (Highland) Field Ambulance (D.F.).—To be temporary Captain: F. M. Rorie.

3rd (Northumberland) Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: W. A. Thompson.

1st (West Riding) Field Ambulance (D.F.).—To be temporary Major: L. A. Mackenzie. To be temporary Captains: J. H. Blackburn, A. Ellison, W. S. Sykes, and A. A. Roberts.

TERRITORIAL FORCE.

Major G. B. Robinson to be D.A.D.M.S., 44th (Home Counties) Division.

Capt. E. A. Houchin resigns his commission, and is granted the rank of Lieutenant-Colonel.

Capt. T. A. Hindmarsh to be Major.

Capt. T. A. Hindmarsh (late R.A.M.C.) to be Captain.

ROYAL AIR FORCE.

C. A. E. I. Brownlee is granted a temporary commission as a Flight Lieutenant.

Capt. C. E. Lowe is transferred to the Unemployed List.

INDIAN MEDICAL SERVICE.

The King has approved the grant of the temporary rank of Major to Capt. J. Findlay whilst D.A.D.M.S.

Temporary Lieutenants to be temporary Captains: Vijaya Shankar Rao Pandit, Joti Prasad Rosha, Perry Prain Tabit, Mohan Lal Kalra, Jyoti Prasad Ganguly, Ramanath Singh, Chandres Charan Das Gupta, Sachindranath Chatterji, Gokal Chand Sood, Annada Persad Sinha, Laiq Chand Datt, Faiyaz Anwar Khan, Jotindra Mohan Banerjee, Ben Phillip Athaide, Prahlad Das Kapur, Kashinath Dattatraya Bhave, Raghunath Bapuji Khave, Sardari Lal Chopra, Narendra Nath Ray, Bhupes Chandra Das Gupta, Nilkanth Vinayak Pandit, Dattatraya Ganeshkotibhaskar, Naravandas Datta, Evelyn Samarasinghe, William Arthur Nason Channmgam, Gamalathge Don Daniel Wijesekere, St. John Puvirajasinghe, Eric Stanley Brohier, Appu Hennedige Theodore de Silva, Frederick Nicholas Jayewardene, John Edward Felix, John Oswald Perera, Edward Wilford Arndt, Vairamuttu Kathirgamatamby, Gour Lal Sen, Mysore Puttanna Sambanurti Rau, Mohamed Yacob, Bhupendra Nath Basu, Vaman Anant Belsare, Bajirao Moreshwar Vaidya, Satchit Kumar Sarkar, Joseph Sebastian Pinto, Dhirendra Nath Chakravarti, Beni Madhava Roy, Anantabandhu Roy Chowdhury, Madhav Krishna Kelavkar, Ardhachandra Banerjee, Ram Chand Mahajan, Baichandra Gangadhar Marathe (since resigned), Dodaballapur Hari Rau, Jagan Nath Piplani, Parmanand Harumal Jhangiani, Phanindra Mohan Lahiri, Tula Ram Birmani, Mangharam Rochiram Lelvani, Jamsetji Ruttonji Mirza, Bhairon Dayal, Herbert McKenzie Strickland, Ardeshir Ratanji Wadhia, Pritam Varialsing Karamchandani, Shankar Rau Pandit, Cecil Gerald Sedgeley Corner (since deceased), Chinnamanoor Subbaroya Narayanswami Aiyar, Annada Charan Sen, Kakkadan Nandanath Krishnan, John Michael Pereira (since resigned), Charu Chandra Protihar, Harry Basil Rosair, Purushottam Gopal Gune, Annulya Dhan Sen Gupta, Jnanendranath Das Gupta, Neni Gopal Chandra, Ganapathi Sreekanta Kuppusamy Iyer, Jiwanda Ram Katariya, Pavanji Ramchandra Rao, Kathira Vellu Muttu Kumaru.

DEATHS IN THE SERVICES.

Fleet-Surgeon Anthony Kidd, R.N. (retired), died on April 22nd, aged 62 years. He entered the Royal Navy in 1881, became staff-surgeon in 1893, and fleet-surgeon four years later. He saw considerable foreign service, chiefly in China, receiving the medal for service during the Boxer rebellion, in North America, and Bermuda. His last appointment was at Pembroke Dockyard, where he was from 1904 to 1914. In 1916 he went to Bath. He did valuable work at the Bath War Hospital and was also anæsthetist at the Bath Ear, Nose, and Throat Hospital.

GENERAL HOSPITAL, BIRMINGHAM.—At a meeting of the governors on May 6th Mr. H. Beckwith Whitehouse was elected honorary obstetric officer to the hospital, thus filling the vacancy caused by the retirement of Dr. Thomas Wilson on the conclusion of his term of office. Mr. Whitehouse has held the post of assistant obstetric officer and assistant clinical lecturer on diseases of women in the University of Birmingham. In 1913-14 he was Hunterian Professor in the Royal College of Surgeons and he has also been Ingleby lecturer at Birmingham.

Correspondence.

"Audi alteram partem."

SAFE CONDUCT OF LABOUR.

To the Editor of THE LANCET.

SIR,—Your leading article in THE LANCET for May 7th under this heading opens up no less important a subject than the total abolition of private practice in midwifery and in every grade of society as I shall attempt to show. The article, I assume, has been written by an obstetric surgeon attached to one of the large obstetric departments either in a special or general hospital and is engaged in actual midwifery private practice and incidentally earning his living, or at least adding to his income thereby. This hypothetical obstetrician goes through a long and arduous training until he reaches the goal of a position on the staff and then he does, or expects to do, what we all do—namely, begins to get a dividend on his investment. His dividend ranges from 40 to 100 guineas for a confinement. Mine averages a fraction over 2 guineas—it used to be a fraction over 1 guinea, the fraction being derived from the occasional 3 or 5-guinea case. If your leading article expresses the situation I should certainly be wiped out of existence as a practitioner of obstetrics in my private practice, as I make no secret of the fact that I cannot conduct a case of labour and make the necessary subsequent visits as well as the antecedent pelvimetry, &c., and with the necessary surgical ritual and sterile appliances incidental to a surgical operation, simply because my usual environment in a case of labour does not permit of it, and 2 guineas has its own limitations in purchasing capacity. But if I am to disappear as a private practitioner so should my more fortunate and perhaps capable colleague. We have both gained our experience on patients of the same social class, and I have no hesitation in asserting that we were no better when we started as students than I am in practising among the same social class in private as I gained my experience from as a student. Both of us, therefore, were as students the same potential sources of evil as I am to-day, and the only certain way to obviate this in the future is to prevent our homologous successors in the obstetric art from ever engaging in private obstetric practice, for there can be no certainty as to who will be a 40-guinea and who a 2-guinea man.

The assumption that I am such a danger to the community, as I infer from your leading article I am, has fortunately been made by the medical advisers of the Kent County Council, and doubtless by all other county councils as well, and steps have been taken to establish midwifery nurses throughout the county who are now attending a proportion of the midwifery cases formerly attended by medical practitioners and at a much lower figure than the exorbitant 2 guineas. This latter fee is only considered necessary in cases of obstetric emergency, requiring all the above-cited ritual and appliances necessary for a surgical operation, and is the amount offered to the general practitioner who consents to enrol himself to accept such fee when summoned by a maternity nurse in difficulties. As, however, the midwife is replacing the practitioner in normal labour the latter in time will have no experience of any form of labour other than what the midwife judges to be an abnormality. If this arrangement is going to improve the existing state of affairs I hope I shall not be here to experience the wholesale justifiable homicide of the general practitioner of my own generation.

The statement as to puerperal sepsis and deaths from the accidents of childbirth is certainly a great surprise to me, and it is in no pharisaical spirit that I say that I have never had either a case of puerperal sepsis or death of a mother at, or attributable to, childbirth during a period of 20 years' private general and midwifery practice, and there must be numbers of practitioners who can say

the same. I have had most of the difficulties of labour and incomplete abortions to contend with under adverse environmental conditions, and before I wore gloves, and besides always having carried a boiler and thoroughly scrubbing my hands and the patient's vulva and buttocks with soap and water and corrosive, and never using anything to dry my hands or the patient with I have taken no other precautions. I was brought up on the douche for post-partum hæmorrhage as a student and extern assistant in the Rotunda, Dublin, but Leopold Landau and Strassmann in Berlin pretty effectually convinced me of its dangers. You state that "the morbidity of childbirth in private practice amounts to something like 15–20 per cent. of all cases." I am not sure that I know what the standard of morbidity is, and so my cases can never have been included in the "all." What verification have you of this statement, even assuming that everyone else knows the standard of morbidity? It seems a very bold assertion to make unless a big percentage of all confinements attended in England, say, can show at least a continuous twice daily temperature chart for ten days after confinement. "Meddlesome midwifery" is another expression that I think can be abused. Would, for instance, the turning of an occipito-posterior presentation into an anterior one, as I practise early in labour, and which, if I remember right, is advocated by Berkeley and Bonney in their midwifery, be regarded as meddlesome? The gentleman who lived up to "keeping his hands in his pockets" would most probably regard it as such.

If my practice is exceptional, and it does not differ in essentials from that of many men whom I have spoken to, the only alternative is the lying-in hospital for all cases, and that will gradually bring with it, in my opinion, the whole-time and State service, which I can see no alternative for in midwifery, if not in general practice altogether. One thing is certain, and that is that the public are demanding more and more freedom from pain in labour which almost necessitates the artificial termination of labour under anæsthesia in some form or other. Twilight sleep I have no experience of, but with the State hospital in being for all classes of patients it looks like becoming the routine treatment of normal and abnormal labour, supplemented, if necessary, by some other form of anæsthesia. The statement, "the incidence of septic infection in lying-in hospitals is extremely small" seems to me to contravert the alleged danger of vaginal examination; for operative procedure, such as forceps and version, &c., must be much commoner in such institutions than in private practice owing to the fact that actual and potential difficult cases are sent into hospital where vaginal manipulation becomes a necessity—unless Cæsarean section is going to replace all other procedure, as one would imagine from the practice of some specialists.

I am, Sir, yours faithfully,

Charing, Kent, May 9th, 1921. H. E. LITTLEDALE, M.D.

*** Our correspondent's deductions seem to us extreme. He is an experienced obstetrician, and so far from being eliminated, as he suggests, would become automatically the guide and counsellor to others less well equipped.—ED. L.

THE SEVEREST ANÆMIAS.

To the Editor of THE LANCET.

SIR,—The admirable summary of the difficulties of the above subject in an annotation in THE LANCET of May 7th and the attention now being given to the production of these anæmias by X rays impel me to draw your attention to an explanation published some ten years ago.[1] It was then suggested that pernicious anæmia, though of mixed intrinsic and extrinsic origin, is more intrinsic than extrinsic, and that the most satisfactory way of accounting for it is to regard it as a vice of development. The key to the situation consists in the recognition of the nature of development. Development is regarded as coincident with life and as divided into phases, first of progression, then of regression. It is, in short, best represented as a circular movement, which begins with the integration of the cell, continues with ever-increasing complexity and diminishing impetus up to middle age, and then merges into its declining or regressive phases, in which this process is reversed, until an ever-increasing simplification ends in the disintegration of death. This, at any rate, is the direction or tendency of the cycle, for the different organs differ so widely in the amplitude of their cycles that while one organ or one system of organs (e.g., the female reproductive organs) may practically run its course and be completed in about 35 years, another may not finish its revolution within double that period. Among these long-lived organs is the chromocytic. Its life-cycle is, indeed, so long or so slow that in the natural course of events it outlasts the cardio-vascular, and perhaps all other vital organs. But let us suppose that from any reason the cycle of the chromocytic organ is shortened, or hastened, so that the red marrow enters upon the last stages of its degeneration while other organs are still vigorous. It will begin, roughly speaking, to repeat the earlier stages of its developmental cycle.

Now these earlier stages are characterised by an abundant proliferation of embryonic cells. And when the cycle is so quickened that its senescent stages are anticipated, then again must we expect to meet with nucleated forms, with evidence of juvenility of the bone-marrow and of the manufacture of a copious supply of young cells. But these new cells are of no use, for they are not young, only spuriously young. They are in their second childhood, not embryonic but embryonoid, and are evidences of decrepitude. And being regressive and senile they cannot do the work of normal blood-discs, but can only pass on to their next phase of regression, which is molecular disintegration. As a matter of fact, they are useless, apart from their incompetence, if only for the reason that they are to all intents foreigners in the blood stream, and as the leucocytic organs are still comparatively young and vigorous they make short work of these nucleated strangers; indeed, they are equivalent to the blood-discs of some lower animals, as was long ago pointed out by Woods Hutchinson. They are therefore promptly destroyed, and the overgrowth of the spleen and the increased pigment in the liver and elsewhere are evidences of their wholesale slaughter.

As for the cause of this premature senescence of the red-blood organ, evidently anything which can unduly and profoundly accelerate its developmental cycle is a potential cause. Among such stimulants or irritants are some bacterial toxins. Arsenic, too, in its more intimate and potent forms has the same effect. But nothing seems better calculated to quicken the revolution of the cycle to its culmination in the breakdown of pernicious anæmia than the X rays. These, like arsenic, stimulate in small dose, irritate in large, and disintegrate if used still more excessively. They are capable of inducing senility of the skin and of the testes and ovaries, as well as senile disorders elsewhere, including pernicious anæmia and cancer. Probably even prolonged exposure to X rays would not cause pernicious anæmia were it not that there is already some inherent weakness or susceptibility of the bone-marrow. And nothing seems more likely to assist in the breakdown as some prior developmental incompetency. Such an inborn defect of development implies a short life-cycle and an undue readiness to undergo the changes of regression and senescence. It is especially in such circumstances that we account for the pernicious anæmia of early life, and, above all, for aplastic anæmia and for its peculiar features.

Apart from the way in which this theory fits in with and explains the phenomena of the severest anæmias there is plenty of evidence in its favour, some of which can be found in the book I have mentioned.

I am, Sir, yours faithfully,

Reading, May 8th, 1921. HASTINGS GILFORD.

[1] Gilford, H.: The Disorders of Post-natal Growth and Development, 1911, p. 378.

RAT DESTRUCTION: A SUGGESTION.

To the Editor of THE LANCET.

SIR,—A recent voyage on a cargo steamer from Durban to Port Louis, Mauritius, has suggested the idea that vessels of this type might well prove to be very suitable for testing the efficacy of the Rodier method for rat destruction. In this method the rodents are trapped, the females killed, and the males set free. Males accordingly predominate in the long run, and the deficiency of females leads to a warfare of extermination amongst the males, the females also suffering in the strife. Many believe that this method is the best yet devised for reducing the numbers of rats, but it is difficult to obtain conclusive proof on the subject when the experiment is conducted under ordinary shore conditions.

On board a ship, however, it seems to me that valuable data could be collected. It is not difficult to ascertain with some degree of accuracy the normal average rat population of any vessel, though, it is true, this population varies, for, even if rats are prevented from boarding ships as free agents, many are conveyed aboard in cargo, especially in the case of merchantmen loading grain. Still, even taking into account this drawback, a cargo-carrier on a long voyage to Eastern ports would appear to offer special facilities for the investigation indicated, and I would suggest that the Society for the Destruction of Vermin might use its influence and see if anything can be done in this direction. If reliable statistics could be obtained from a ship-board experiment on a considerable scale they would be distinctly helpful to those entrusted with the duty of dealing with the rat menace either from an economic or a sanitary standpoint.

I am, Sir, yours faithfully,

ANDREW BALFOUR,
Director-in-Chief, Wellcome Bureau of Scientific Research.
Port Louis, Mauritius, April, 1921.

THE STATUS OF THE DISTRICT MEDICAL OFFICER OF HEALTH.

To the Editor of THE LANCET.

SIR,—In the correspondence columns of your issue of April 23rd a point was raised as to the relative official position of the county medical officer and the medical officer of health of a district within the county. To those outside the public health service it is commonly and erroneously accepted that as the county includes the district, so, in some similar kind of way, the county medical officer is superior to the medical officer of health of a district. The editorial note to Dr. Herbert Jones's letter (p. 879) in reference to this matter does not clear up the point at all, but rather confirms the error. It should be observed that by Art. 16 of the Sanitary Officers (Outside London) Order, dated Dec. 13th, 1910, the copy of the annual report which the medical officer of health of a district is required to transmit goes to the county *council* and *not to the county medical officer*. It is therefore properly to be addressed not to the latter, but to the clerk of the county council or to the chairman. In your expression "the county officer is suzerain to the district officer," the word "suzerain," which means "lord paramount," is certainly not applicable, for in the House of Commons on Nov. 18th last Dr. Addison, in reply to General Sir Ivor Phillips, stated quite frankly and definitely that a county medical officer of health did *not* supervise the district medical officer of health. There is, in fact, nothing in the whole of the statutory rules and orders relating to public health which gives the least support to this claim of "superiority."

I am, Sir, yours faithfully,

JAMES J. PATERSON, M.D.
Guildhall, Maidenhead, May 3rd, 1921.

*** Our correspondent differs from us only on a definition. The word "suzerain" implies no more than a nominal sovereignty over autonomous States, and we carefully qualified our expression with the words "to this extent."—ED.L.

SALICIN AS A REMEDY FOR RHEUMATISM.

To the Editor of THE LANCET.

SIR,—I understand that Buchner of Germany, Fontana and Rigotelli of Italy, and Le Roux of France, all claim as their work the first accurate investigation of the properties of salicin. In 1862, whilst surgeon in charge of H.M.S. wooden paddle-sloop *Salamander*, on surveying service in the coral sea off North Australia, I had a case of rheumatic fever; quinine had run out, and there was no drug store within a thousand miles. I happened to have a bottle of salicin, then hardly used in medicine, and not supplied by the Admiralty; I employed it with success, and may therefore fairly claim the discovery of the efficacy of the salicylic treatment of rheumatism.

I am, Sir, yours faithfully,

RICHARD CANNON, M.D.
Viña del Mor, Chili, March 20th, 1921.

A PROJECT OF GENERAL REPRESENTATION.

To the Editor of THE LANCET.

SIR,—On Saturday, May 28th, the annual dinner of the National Medical Union will be held at the Monico Restaurant, Piccadilly-circus, London, at 7.15 P.M. The price of tickets for admission will be 10*s.* 6*d.*, excluding wine. The London President of the Union, Dr. Alexander Blackhall-Morison, will make a communication on "a project for the formation of a General Medical Council representative of the whole profession as a body, related on the one hand to the public and on the other to the government of the country and empire."

The Council of the Union invite all medical men to attend the dinner and hear the statement, which has received their approval as a practical scheme in the interests of both the public and the profession and one calculated to heal divisions in our ranks.

An early intimation to be present at the dinner will be welcomed and may be sent to either Dr. J. Wilson, 25, Larkhall-rise, Clapham, S.W.; Dr. A. Bousfield, Tudor Lodge, Hornsey-lane, N.; or to myself at this address.—I am, Sir, yours faithfully,

E. H. WORTH,
Hon. Secretary to the National Medical Union.
2, Aldrington-road, Streatham, S.W., May 8th, 1921.

THE HYGIENE OF THE SAILOR.

To the Editor of THE LANCET.

SIR,—Sixteen years ago I went for some voyages for my health as ship's surgeon, and in many instances can support Dr. Leonard Burton in his remarks in THE LANCET of May 7th under this heading. On being appointed to one of the newest ships of the Royal Mail S.S. Co. I drew their attention to the inadequacy of the hospital cabins and facilities for isolating cases of infectious disease. I drew up to scale plans for two four-berth hospital cabins, with bath-rooms and W.C.'s attached, and an attachment on the doors for connecting the Clayton apparatus for disinfection with SO_2. These cabins, together with a cabin for an attendant and one for myself for investigating materies, &c., to be on the raised poop deck aft, so that all infection should be left behind. I was not popular at first, but subsequently Sir Owen Phillips, with his capacity for seeing what was best for his ships, adopted my plans on all his new ships, with the result that for three and a half years I was able to prevent at once the spread of any infectious disease, of which I had to handle many varieties. In addition to these there were other hospital cabins with a very complete dispensary for'ard, besides one attached to my own consulting-room, and the company never hesitated to provide me with anything in reason. It is up to the doctor to insist on being provided with what is necessary, and if he does not do so he has himself to blame very often.

I am, Sir, yours faithfully,

REGINALD POLLARD, M.B., D.P.H., M.R.C.S.
Egerton-crescent, South Kensington, May 7th, 1921.

THE DIET OF THE WEANLING.

To the Editor of THE LANCET.

SIR,—Work at infant clinics would lead to the view that the tendency at the present time to discourage giving milk in any quantity to the weanling is deplorable.

Anyone wishing to study the result in the children of the poor and less affluent middle-class should examine the five-year-olds about to start school. It has been my duty to do so for the last three years, and I have been appalled at their poor physique. The only bright spots have been usually in those cases where the children have had milk to drink. Rarely does one see a child of normal growth who is not getting milk. Indeed, to my mind, the one advantage of artificial feeding over breast-feeding is that the parents have been in the habit of buying milk for the baby and often keep it up; whereas the breast-fed baby gets a "bit of what we have ourselves," and little or no cow's milk. Certainly the worst cases of rickets that I have seen have been in breast-fed babies who have had no milk after weaning. At one time most babies got butter, now most babies get margarine made from vegetable oil, so have not even that protection. Given "food of a suitable kind," one might scrap the milk, but the point is so few get it, and incalculable harm may come from advising parents to do so (parents, moreover, who are not the least likely to overdo it). With regard to the children's dislike for it, one often sees an infant who will greedily suck a bottle full of milk with the greatest gusto, but refuses to take it from a cup or spoon. Is this dislike?

One might just as well say that the human mother had lost her function of lactation because she could not supply milk for butter as to argue that she has lost it because cow's milk is necessary for most babies.

I am, Sir, yours faithfully,

Leeds, May 9th, 1921. MARION E. MACKENZIE.

THE DANGER OF ATHLETICS FOR GIRLS AND WOMEN.

To the Editor of THE LANCET.

SIR,—Being one of those who maintained that women had a right to the vote and that their advice was most valuable and desirable on public matters, I also held, as most feminists do still, that sex was more or less incidental and that a well-trained woman could do anything a man could, unless, perhaps, when it was a case of exerting sheer physical force. I was a keen advocate of all forms of physical culture for girls, the more so as I suffered from neglect in that way myself as a child. Girls were encouraged by me to take up the work of a drill and games mistress, it appearing almost an ideal occupation. The more, however, I came in contact with women who had trained for it the more was I disappointed with the effect of that training upon them. The girls, also, who took up what had been regarded as boys' games, hockey, and even cricket, seemed to deteriorate. They seemed more selfish, more concentrated upon material things and material advantages. The girl of 15 appeared less a budding woman than an enlarged and accentuated copy of herself at 10 years old. She had not risen in the scale of being. There might be an affectation of being "sporting" about her, but actually the girl whose utmost achievement in physical work was to dance or perhaps to fence was quite as honourable and played the game of life at least as well.

But it was the grown women who made me decide finally against the present system of strenuous sports for girls and realise that the difference between men and women, boys and girls, was not one of education, environment, and opportunity, but was a vital and fundamental one. I knew many women who were physical experts and who prided themselves upon the fact. Few of them had not had at some time a more or less serious breakdown. I inquired into the after-careers of many and the results were not encouraging. This made me keep a very careful check on any girls I had to do with, though still I was most unwilling to acknowledge that girls could not do what boys could, forgetting that difference need not mean inferiority, but might even imply the opposite. Yet I saw that the young women joining in strenuous games became possessed of hard muscles, a set jaw, flat chest, and often a hard aggressive manner and an ungainly carriage. A girl's body is more elastic, more variable, and more easily altered than that of a boy. Nor should it be forgotten that the organs are more easily displaced. The attempt to make a boy of the girl has led to the cult of the "boyish" figure with undeveloped breasts. Broad elastic bandages are now worn round the chest to produce an unnatural flatness, while drugs are also taken, I am told, for the same purpose. It is unnecessary to say how dangerous are such practices, while a flat chest is really a deformity in a well-grown and developed young woman.

So much for their appearance. But the health of these athletic women is often more apparent than real. They frequently suffer from nerves (manifested in irritable tempers), from heart trouble, from some form of rheumatism, or from displacement of some kind. Sometimes the monthly disability that should prove them women stops for long periods. When there is any unaccustomed strain upon them they do not seem able to meet it. Their marriages are often childless, and I have many times heard, when a woman has lost a child or had a particularly difficult confinement surprise expressed. "She was such a fine strong girl," or "One would think an athletic girl such as she would be up and out almost at once, like a savage woman." I have been sorry to see the physical inferiority of children of sporting mothers, they often being nervous, and the mother becoming so as well sometimes. They compare badly with the stalwart sons many a slight feminine woman produced in Victorian days.

The attitude of these women to life is frequently not a normal one. Their mentality is not healthy. Many who decry marriage and affect to despise the opposite sex (while imitating them) are yet inordinately occupied with the discussion of sexual matters. Allied to this aspect is the curious influence exerted by some of these women on girls, neurotic girls seeming obsessed by them. Most of them seem to have stifled what is finest in woman—love, sympathy, tact, and intuitive understanding. When we object to girls joining in the games of boys we are answered that girls learn a lesson they much need—not to play selfishly for themselves, but to play for their side. I deny this. At adolescence girls are often almost dangerously altruistic, and a girl will exert herself far beyond her powers for her side, if not most carefully watched. She needs very delicate handling in her 'teens, for her feelings are subtle and elusive and her affections at full flood.

Unwillingly I have been convinced by the logic of experience. Strenuous games I believe bad for the woman and worse for the girl. And the sooner it is realised that the differences between the sexes are profound and vital and that these differences are accentuated and not lessened by evolution, the better for humanity. Let it be recognised that the present cult is a retrogression, and the young girl have placed before her the ideal of true womanhood, of all the qualities that make for motherhood; so that, whether she has her own family or finds happiness in some other sphere, she may realise it is her gift of "mothering" that makes her of value in the world.

I am, Sir, yours faithfully,

C. COWDROY.

Crouch End High School and College, London, N., May 9th, 1921.

BOGNOR WAR MEMORIAL HOSPITAL.—In only two years this hospital has become a fully equipped institution, and already the provision of a new block is being talked about. One hundred and fifty-two patients were admitted during the year, and 67 operations were performed. The out-patients are constantly increasing; the number during the month of April this year was 222. The hospital is also becoming firmly established financially, and it is hoped to keep it free from debt. It is receiving good local support, and patients are invited to contribute to the cost of treatment. From this source £231 7*s.* has been obtained. It is hoped to provide wards for paying patients and a maternity ward in the future.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Dentists Bill.

THE Dentists Bill, which gives effect to the recommendations contained in the Report of the Departmental Committee on the Dentists Act, 1878, has now been printed. It is identical with the Bill which was introduced at the end of last session, except for a few alterations of minor importance for the purpose of meeting criticisms urged against the former measure, and a few other alterations of a purely drafting character. It is understood that the measure is now practically an agreed one. The Bill provides for the establishment of a Dental Board, consisting partly of dentists and partly of medical practitioners, together with a non-professional element. The first Board is to be entirely nominated, but in succeeding Boards 6 out of the 13 members will be elected by and from the dentists on the register. Clause 1 (which will take effect not earlier than one year or later than three years from the commencement of the Act) prohibits the practice of dentistry by unregistered dentists. Existing unregistered dentists are given the right of admission to the register, subject to evidence of good character, if they satisfy the Board that they have for five out of the seven years immediately preceding the commencement of the Act been engaged in the practice of dentistry as their principal means of livelihood. Existing unregistered dentists who have been in practice for less than five years will be required to pass an examination before being admitted to the register. The Board are given a dispensing power to deal with cases of persons who cannot meet the requirements of the Bill by reason of military service. Special provisions are included to deal with limited companies carrying on the business of dentistry. Existing rights are safeguarded, but in future all the directors and managers of such companies and the operating staff employed by them will be required to be registered dentists. The powers of the General Medical Council, so far as they relate to the maintenance of the Dentists Register, will be transferred to the Dental Board, but any regulations made by the Board under the Bill must be approved by the General Medical Council and the Privy Council.

HOUSE OF LORDS.

TUESDAY, MAY 10TH.

Public Health (Tuberculosis) Bill.

The Public Health (Tuberculosis) Bill was considered on Report and agreed to.

HOUSE OF COMMONS.

WEDNESDAY, MAY 4TH.

Internment of a Heart Disease Patient.

Mr. MYERS asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been drawn to the case of Frederick Schweppe, who was arrested on Good Friday morning and was still imprisoned at Arbour Hill; whether he was aware that on Nov. 29th, shortly after a period of treatment for valvular disease of the heart at the Mater Hospital, Mr. Schweppe was arrested and detained until Dec. 7th, when he was discharged, the military doctor at Arbour Hill having certified that he was a very bad case and not fit for internment and ought to be released immediately; that from then until Good Friday Mr. Schweppe attended the doctor; that when he was arrested on Good Friday he was roughly handled by men of the auxiliaries; that he was at present suffering from sleeplessness and his health was generally very weak; that Dr. F. H. Moore, of the Mater Hospital, had certified that Schweppe had been attending the dispensary for months past and been treated for serious and apparently progressive heart disease; and whether, in view of the fact that nothing of an incriminating nature was found in Mr. Schweppe's house, and in view also of the man's state of health as certified previously by the military doctor of Arbour Hill, he would give instructions for his immediate release.—Sir H. GREENWOOD replied: In the workshop in rear of the house occupied by this man a number of revolvers and automatic pistols were found, in addition to explosives and detonators, and there was good ground for believing that he was concerned in the distribution of these munitions. An internment order has been made against him, but he is at present in hospital suffering from dilated heart and hernia, and not in Arbour Hill as stated. It is true that he was previously arrested on Nov. 29th, but there is no record of any such medical certificate as is referred to in the question. No allegation that he was ill-treated on arrest has previously been brought to my notice, but I will have inquiries made. Careful attention will be paid to this man's health, and he will not be transferred to an internment camp unless he is fitted for such transfer; but in view of the circumstances in which he was arrested I am not prepared to order his release.

War Casualty Return.

Sir WILLIAM DAVISON asked the Prime Minister if he would state what were the total casualties in killed and wounded suffered by Great Britain, the Dominions, by each of the Allies, and by Germany during the late war.—Mr. CHAMBERLAIN (Leader of the House) circulated the following printed return:—

Return Showing Approximate Casualties Suffered by Great Britain, India, the Dominions, by each of the Allies, America, and Germany During the late War.

Country.	Deaths from all causes.			Wounded.			Total deaths and wounded.			
	Officers.	O.R.	Total.	Officers.	O.R.	Total.	Officers.	O.R.	Total.	
Great Britain	43,480	701,222	743,702	85,117	1,608,145	1,693,262	128,597	2,309,367	2,437,964	
Canada	2,887	53,738	56,625	6,347	143,385	149,732	9,234	197,123	206,357	
Australia	2,862	56,468	59,330	6,304	145,867	152,171	9,166	202,335	211,501	
New Zealand	735	15,401	16,136	1,668	39,061	40,729	2,403	55,002	57,405	
South Africa, Newfoundland, other Colonies	481	8,351	8,832	792	14,361	15,153	1,273	12,712	113,985	
Total Dominions and Colonies	6,965	133,958	140,923	15,111	342,674	357,785	22,076	467,272	489,248	
India	868	60,530	61,398	1,675	69,184	70,859	2,543	69,714	72,257	
Allied and Associated Countries.										Reported casualties to—
France	—	—	1,385,300	—	No record.	—	—	—	—	Nov. 1st, 1920.
Belgium	—	—	38,172	—	—	44,686	—	—	82,858	,, 11th, 1918.
Italy	—	—	460,000	—	—	947,000	—	—	1,407,000	,, 11th, 1918.
Portugal	—	—	7,222	—	—	13,751	—	—	20,973	Jan. 1st, 1920.
Roumania	—	—	335,706	—	No record.	—	—	—	335,706	,, 6th, 1919
Serbia	—	—	127,535	—	—	133,148	—	—	260,683	Dec. 4th, 1918.
Greece	—	—	5,000	—	—	21,000	—	—	26,000	
United States of America	—	—	115,660	—	—	205,690	—	—	321,350	April 1st, 1920.
Germany	—	—	2,050,466	—	—	4,202,028	—	—	6,252,494	Approximate.
Austria	—	—	1,200,000	—	—	3,620,000	—	—	4,820,000	,,
Hungary										
Bulgaria	—	—	101,224	—	—	152,400	—	—	253,624	,,
Turkey	—	—	300,000	—	—	570,000	—	—	870,000	,,

Note.—The figures given in this Return include British naval casualties between August 4th, 1914, and Nov. 11th, 1918, and British military casualties during the period August 4th, 1914, to April 30th, 1920, and excludes casualties to Chinese Labour Corps recruited locally in Salonica and Mesopotamia, and camp followers in East Africa.

Note.—The figures in regard to Bulgaria were furnished by the Bulgarian General Staff in 1919, and were considered by them an under-estimate, as many archives were lost in the debacle of 1918.

Report of Committee on Dangerous Drugs.

Mr. GILBERT asked the Secretary for the Home Department when the Report of the Committee on the Regulations under The Dangerous Drugs Act, 1920, might be expected; and whether, and when, it would be published.—Mr. SHORTT replied: The Committee have, I understand, nearly completed their inquiry, but I hope to have their Report shortly. The Report will be published.

Finance of Voluntary Hospitals.

Mr. GILBERT asked the Minister of Health when the report of the Departmental Committee on the finances of the voluntary hospitals might be expected; and whether and when it would be published.—Sir ALFRED MOND replied: I am informed that the Committee will finish hearing evidence this week, and hope to be in a position to present their report by the end of the month.

Military and Naval Cases of Small-pox.

Mr. RAFFAN asked the Minister of Health in which hospitals the four naval and 13 military cases of small-pox, which were reported in 1919, were treated.—Sir ALFRED MOND replied: The names of the hospitals and the number of cases treated in each are as follows: Colchester Borough Small-pox Hospital (1); Evan Fraser Hospital, Hull (3); Falking Grange Hospital (1); Lincoln City Small-pox Hospital (2); Liverpool Port Sanitary Hospital (2); Military Hospital, Cambridge (1); Military Hospital, Nell-lane, Manchester (1); Prees Heath Military Hospital (2); Royal Naval Hospital, Portsmouth (1); 3rd London General Hospital (1); West Suffolk County Hospital (1). One of the military cases was not removed to hospital.

Treatment of Probationer Nurses.

Mr. DENNIS HERBERT asked the Minister of Health if his attention had been called to the alleged unfair treatment of probationer nurses at the West Middlesex Hospital, under the Brentford Board of Guardians; if he was aware of the serious discontent thus caused amongst the nursing staff; and what steps he proposed to take in the matter.—Sir ALFRED MOND replied: I have been in communication both with the board of guardians and with various associations which have taken this matter up on behalf of the nursing staff, and I have offered, if they so desire, to arrange a meeting between these associations and officers of my Department, at which the case can be further considered in the light of the explanation which I have received from the guardians.

Diagnosis and Treatment of Venereal Disease.

Mr. WATERSON asked the Minister of Health whether he could produce any evidence to show to what extent cures were being effected as a consequence of the large expenditure of public money which was now taking place in connexion with the diagnosis and treatment of venereal diseases; and, if so, would he arrange for such evidence to appear in the annual reports of his department.—Sir ALFRED MOND replied: The value of the work done at venereal disease centres cannot be measured solely on the basis of the proportion of cures effected. I am advised that in the case of these diseases prolonged treatment followed by a period of observation is frequently necessary before a cure can be pronounced, and in some cases it is difficult to arrive at a conclusion as to cure. There are, however, many cases which, although they fail to continue treatment or to remain under observation until a cure can be pronounced, are nevertheless rendered non-infective before ceasing attendance at the clinic. As the honourable Member is aware, the system of clinics has not been long in operation. The results are under careful observation, and the report of the chief medical officer of the Ministry for this year will contain a statement on the subject.

THURSDAY, MAY 5TH.

Appeal Tribunals.

Replying to questions by Mr. HURD and Captain FOXCROFT regarding the expediting of the work of the Pension Appeal Tribunals, Captain H. D. KING (for the Lord Chancellor) stated that five additional Pension Appeal Tribunals would commence to sit this month, and further tribunals were in course of formation. The average period which elapsed between the date an appeal was received by the Pensions Appeal Tribunals and the date it was heard was at present 10 weeks. In Somerset all appeals received up to the beginning of February last had been dealt with or would be heard within the next two weeks.

Treatment of Shell Shock.

Mr. HURD asked the Minister of Pensions what special arrangements were made for ex-soldiers who were suffering from shell shock and were detained in public asylums; how their treatment was differentiated from that of ordinary inmates; and what steps were taken, or were in contemplation, for treatment especially suited to their malady, and for independent examination at intervals by military doctors with a view to their earliest possible recovery.—Mr. JAMES PARKER replied: Ex-Service men are not medically treated in public asylums unless certified under the Lunacy Acts to be insane. Men suffering only from shell shock are not so certified. Treatment is in such cases provided in an institution of the Ministry of Pensions, the men being under the care of experienced medical officers who have special knowledge of the particular disability and of the appropriate treatment.—Mr. HURD: Is it not a fact that ex-soldiers in these public asylums are treated as though they were ordinary lunatics, and is that not a state of things that ought to be changed?—Mr. PARKER: I do not think that is true, but I cannot speak with authority on the matter.—Mr. HURD: Will the honourable gentleman raise this question with the Minister so that a specific answer to the question may be obtained?—Mr. PARKER: Certainly.

Unemployment and Sickness Benefit.

Sir WALTER DE FRECE asked the Minister of Labour whether his attention had been called to the fact that during the time an insured person was in receipt of unemployment benefit his health card was not stamped and he was consequently falling into arrears with his contributions under this section; whether unless such arrears were paid up his sickness benefit would be reduced accordingly; whether under sickness benefit the contrary practice was observed; and whether the practice in the two cases could be made identical.—Sir A. MOND (Minister of Health) replied: It is the case that during periods of unemployment insured persons fall into arrears in respect of their health insurance contributions. There is, however, an allowance of four weeks of unemployment in any year before any penalty is imposed in the form of reduction of sickness benefit, and even if the arrears exceed this amount no reduction in sickness benefit can take place until the following year, and this reduction can be avoided by the payment of a comparatively trifling sum in the autumn preceding. Although the scheme of unemployment insurance differs materially from that of health insurance, it is not the case, as the honourable Member would appear to think, that an insured person is credited with a contribution for unemployment insurance in respect of any week for which he received sickness benefit.

Indian Medical Service Statistics.

Major GLYN asked the Secretary for India what was the present total establishment of the Indian Medical Service; what proportion of the officers in that Service were British born or natives of India in the following years: 1910, 1914, 1918, and 1921; what steps were being taken to safeguard the position of British-born officers in that Service who joined before the war; what steps, if any, were being taken to encourage British-born students to enter the Indian Medical Service; and what were the proportions of candidates to enter the Service, British and Indian, in 1910, 1914, 1918, and 1920.—Mr. MONTAGU replied: The number of officers holding permanent commissions in the Indian Medical Service on Jan. 1st, 1921, was 767. The following table gives the numbers of permanent officers in the Indian Medical Service on Jan. 1st, 1910, 1914, 1918, and 1921:—

	British born.	Indians.	Total.
1910	694	37	731
1914	722	48	770
1918	712	71	783
1921	638	129	767

The distribution as between British born officers and Indians has been arrived at after an examination of the names in the Army list and must therefore be regarded as only approximately correct. I am not sure that I understand what is meant by that part of the question regarding British born officers who joined the Service before the war. The position of such officers is in no way jeopardised by the admission of officers, European or Indian, during the war. Every effort is being made to fill up existing vacancies available for Europeans, and the conditions as regards pay, leave, and pension have recently be considerably improved. I am advised, however, in view of the great shortage of medical men caused by the war, that it will be a year before the medical schools of this country are in a position to turn out qualified men of the standard required for the Service in anything like the normal numbers. The following are the numbers of candidates who entered the Service in 1910, 1914, 1918, and 1920:—

	Europeans.	Indians.	Total.
1910 (Examination) ...	22	6	28
1914 (Examination) ...	18	15	33
1918 (Selection)	9	9	18
1920 (Selection)	23	52	75

Dentists Bill.

Sir A. MOND presented a Bill "to amend the Dentists Act, 1878, and the provisions of the Medical Act, 1886, amending that Act." The Bill was read a first time and ordered to be printed.

MONDAY, MAY 9TH.

The Bastardy Bill.

Captain BOWYER asked the Prime Minister whether he was aware of the great volume of support that existed in the country for the Bastardy Bill; whether he realised that the Bill was identical in its clauses with the Bill which left the Standing Committee last session; and whether, in view of its simplicity and of the urgent needs of its reforms, he would facilitate the passage of the Bill into law.—Mr. LLOYD GEORGE replied: It is premature until we see what time is available at the end of the session to make any fresh promises as to the allocation of the time of the House.

The Necessity of Cheap Milk.

Captain Viscount CURZON asked the President of the Board of Trade whether he was aware that the price of milk in the Metropolitan area had been fixed at 8*d.* per quart for the summer months; and whether, in view of the vital necessity of cheap milk to the working population, he would immediately appoint a committee to inquire into and report on the cost of production and distribution with the view to determining what was a fair price to the consumer.—Sir W. MITCHELL-THOMSON (Parliamentary Secretary to the Board of Trade) replied: I understand that the price of 8*d.* is that recommended by the National Federation of Dairymen's Associations. The retail price of milk depends not only on the cost of production and distribution of such milk as is consumed directly, but also upon the loss which has to be incurred by the conversion of large quantities of milk at this season into butter and cheese, the prices of which are governed by those of imported supplies. The report on milk prepared by the subcommittee appointed by the Standing Committee on Trusts (Cmd. 1102) indicated that combinations of distributors had not dealt unfairly with either producer or consumer down to the autumn of last year, and I see no reason to think that circumstances are different at the present time. To reimpose control of milk prices would involve the re-engagement of a considerable and costly staff, and it is not clear that the consumer would ultimately benefit.

Medical Students and Defence Force.

Mr. BRIANT asked the Secretary for War if, as many members of the Defence Corps were being retained with no special duties to perform who left their medical and other studies in order to meet a national emergency, consideration would be given to application for leave on the undertaking that they would immediately rejoin if their services were required.—Lieutenant-Colonel Sir R. A. SANDERS (Under Secretary for War) replied: Instructions have already been issued authorising officers commanding units to grant leave to soldiers of the Defence Force up to a maximum of 10 per cent. of a unit at any one time. These instructions provide for preference being given to cases of hardship, including teachers, students, apprentices, and those undergoing training under the Board of Education and Ministry of Labour, especially those about to undergo examination, and those employed in one-man businesses or in similar positions, the remainder being chosen by ballot.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BULLEN, H., F.R.C.S., has been appointed head of the Department of Orthopædics, including Remedial Exercises and Massage, at Charing Cross Hospital.

CORBETT, W. V., M.R.C.S., L.R.C.P., Pathologist to the London Lock Hospital.

FISHER, A. G. T., M.C., F.R.C.S., Assistant Surgeon to the Seamen's (Dreadnought) Hospital, Greenwich.

HERBERT, J. F. J., M.B., B.Ch., First Assistant Medical Officer to the Marylebone Infirmary.

Royal Alexandra Hospital for Sick Children, Brighton: EDMONDS, FLORENCE M., M.D., B.S. Lond., Honorary Physician: FITZMAURICE-KELLY, M., M.B., B.S. Lond., Honorary Assistant Surgeon.

Vacancies.

For further information refer to the advertisement columns.

Adelaide University.—Professor of Zoology. £1100.
Barrow-in-Furness County Borough.—Asst. Sch. M.O. £500.
Bath, Royal Mineral Water Hospital.—Res. M.O. £250.
Bedford County Hospital.—Asst. H.S. £150.
Birmingham, Queen's Hospital.—Hon. Obst. O.
Bootle Borough Hospital.—H.S. £150. Also Hon. S.
Cardiff City and Port Education Authority.—M.O.H. and Chief M.O. £1200.
Cardiff, King Edward VII. Welsh National Memorial Association.—Asst. Tubere. P. £300.
Cardiff, King Edward VII. Hospital.—H.S. £200.
Cardiff, University College of South Wales and Monmouthshire, Welsh National School of Medicine.—Prof. of Med. and Prof. of Surg. £1500 each.
Chester Royal Infirmary.—Asst. H.S. £175.
Colchester, Essex County Hospital.—H.S. £200.
Dublin University.—Chair of Zoology. £800.
Dumfries, Crichton Royal Mental Hospital.—Clin. Path. £400.
Dundee Royal Infirmary.—Hon. Asst. Gynæcol. and Obstet. Dept.
East Sussex County Council Education Committee.—Asst. Sch. M.O. £500.
Exeter, Royal Devon and Exeter Hospital.—Hon. Asst. S. and Hon. Surg. Reg.
General Post Office, Headquarters Medical Department.—Asst. M.O. £300.
Great Northern Central Hospital, Holloway, N.—H.S. £150.
Harrogate Infirmary.—H.S. £150.
Hellingly, East Sussex County Mental Hospital.—Sec. Asst. M.O. £450.
Hospital for Sick Children, Great Ormond-street, W.C.—Radiographer. Also Clin. Asst. in Venereal Dept. £1 1*s.* per visit. H.S. £100.
Hull Royal Infirmary.—Asst. H.S. £150.
Ipswich, East Suffolk and Ipswich Hospital.—H.P.
Kingussie, N.B., Grampian Sanatorium.—Locum.
London Temperance Hospital, Hampstead-road, N.W.—Ophth. S. and Asst. S. Also Res Cas. O. £125.
Manchester Royal Infirmary.—Res. Surg. O. £250.
Manchester, St. Mary's Hospitals for Women and Children.—Asst. M.O. £100.
Manchester, Whitworth Park Hospital.—H.S. £100.
Metropolitan Asylums Board Tuberculosis Service.—Jun. Asst. M.O. at High Wood, Brentwood, Essex. £515 6*s.*
Middlesbrough Education Committee.—Asst. School M.O. (Female). £500.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £150.
National Hospital for the Paralysed and Epileptic, Queen-square, Bloomsbury, W.C.—Res. M.O. £200.
Nottingham City Education Committee.—Jun. Asst. Sch. M.O. £537 10*s.*
Orkney, Eday Parish Council.—M.O. £5 per week.
Preston and County of Lancaster Royal Infirmary.—H.S. £200.
Prince of Wales's General Hospital, Tottenham, N.—Hon. P. and Hon. Asst. P.
Queen Mary's Hospital for East End, Stratford, E.—Cas. O.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal College of Surgeons of England.—Election to Court of Examiners. Also Election of Professors and Lecturers.
Royal Naval Dental Service.—Appointments.
Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.
Royal Waterloo Hospital for Children and Women, S.E.—Hon. P. and Hon. Gynæcol.
St. Bartholomew's Hospital.—Asst. M.O.'s to X Ray Dept.
S. George's Home, Milman's-street, Chelsea, S.W.—Part-time Visit. Asst. M.O. £200.
Scottish Board of Health.—Part-time Local Referees. £2 2*s.* per session.
Sheffield City.—Asst. Tubere. O. £350.
South London Hospital for Women, South Side, Clapham Common, S.W.—Temp. (Female) Asst. S.
South Shields County Borough.—Ven. Dis. M.O. £750.
Staffordshire General Infirmary.—H.S. £250.
Swinton and Pendlebury Urban District.—M.O.H. and Sch. M.O. £800.
Taunton and Somerset Hospital.—Sen. and Jun. H.S.'s. £200 and £150.
Weir Hospital, Grove-road, Balham, S.W.—Res. M.O. £200.
Worcester County and City Mental Hospital, Powick.—Sen. Asst. M.O. £450. Also Jun. Asst. M.O. £350.
York County Hospital.—Third Res. O. £150.

Births, Marriages, and Deaths.

BIRTHS.

FARR.—On May 3rd, at Pembroke-road, Kensington, W., the wife of Dr. Arthur Farr, of a son, prematurely (lived for a few hours).

MILTON.—On May 5th, at "High Lea," Hendon, the wife of Wallis Milton, L.D.S. R.C.S. Eng., of a son.

MARRIAGES.

MOLLAN—DES VŒUX.—On April 7th, at Christ Church, Rawalpindi, India, Captain Mollan, M.C., R.A.M.C., to Violet Samana, youngest daughter of the late Lieutenant-General Sir Charles Hamilton Des Vœux and Lady Des Vœux, Palace Mansions, Kensington, W.

WILSON—BOYD.—On May 3rd, at Glasgow, Kenneth John Talbot Wilson, M.B., Ch.B., of Blandford, Dorsetshire, to Agnes Mitchell, second daughter of Mr. David M. Boyd, of Giffnock, Glasgow.

DEATHS.

BROGDEN.—On May 4th, suddenly, at Ashdown Lodge, Bathurst-road, Folkestone, Richard William Brogden, M.B., B.S., aged 61.

HOLLINGS.—On May 3rd, at Gordon-street, W.C., Edwin Hollings, M.D., in his 79th year.

HOYSTED.—On May 3rd, at Geeta, Sidcup, Kent, Isaac Hoysted, Colonel, R.A.M.C., retired, aged 88.

LONGSTAFF.—On May 7th, at Putney, George Blundell Longstaff, M.A., M.D. Oxon., F.R.C.P., F.S.A., F.L.S., F.G.S., in his 73rd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

Medical News.

UNIVERSITY OF CAMBRIDGE.—**At the congregation** held on May 7th the following degrees were conferred:—

M.D.—A. T. Edwards, St. John's.
M.B. and B.Ch.—J. B. Hunter, St. John's; W. E. H. Banks, Clare; H. Gainsborough, Downing.
M.B.—H. A. Whyte-Venables, Queen's.
B.Ch.—W. N. Goldschmidt, Pembroke.

UNIVERSITY OF OXFORD: *Wilde Readership in Mental Philosophy.*—The electors to this readership will shortly proceed to the election of a reader. The emoluments of the readership amount at present to £400 a year. Candidates are requested to send in their applications, with evidence of their qualifications, to reach the registrar of the University not later than June 1st, 1921. An extract from the regulations is published in the University Gazette (Clarendon Press), April 21st.

Diploma in Public Health.—The Board of the Faculty of Medicine has issued the new syllabus of examination, which will come into force in Michaelmas term, 1921. The examination in "General Pathology with Special Relation to Infectious Diseases" (paper, practical work, and viva voce) is transferred to Part I.; a practical and viva voce examination in pathology and bacteriology is retained in Part II.

Rolleston Memorial Prize, 1922.—The next award of this prize, which is of the value of about £100, will be made in the summer term of 1922. The prize is awarded for original research in any subject comprised in the following list: animal and vegetable morphology, physiology and pathology, anthropology. Candidates must forward their memoirs to the registrar before March 31st, 1922. The conditions of eligibility are published in the University Gazette of April 27th.

UNIVERSITY OF LONDON.—**A course of eight** lectures on Metabolism of Cholesterol and the Sterols will be given by Mr. J. A. Gardner at the London (R.F.H.) School of Medicine for Women (8, Hunter-street, Brunswick-square, London, W.C.), at 5 P.M. on Tuesdays, beginning on May 17th.—A course of eight lectures on Experimental Studies in Vegetable Physiology and Vegetable Electricity will be given by Professor A. D. Waller, F.R.S., and Mr. J. C. Waller in the Physiological Laboratory of the University, South Kensington, London, S.W., at 5.15 P.M. on Wednesdays, beginning on May 18th. Attendance at the courses is recognised in connexion with the B.Sc. (honours) degree in physiology.—A course of four lectures on the Interpretation of the Structure of the Brain is now being given in the Department of Anatomy, University College, Gower-street, W.C., by Dr. C. U. Ariens Kappers (Director of the Central Institute for Brain Research, Amsterdam) at 5 P.M. The first took place on May 13th, and the other lectures are being held to-day, Friday, and on May 19th and 20th. All these courses of lectures are addressed to advanced students of the University and to others interested in the subjects. Admission is free, without ticket.

UNIVERSITY OF MANCHESTER.—**At a meeting of** the governors of the University Court on May 4th Sir H. Miers, the Vice-Chancellor, reviewing the work during the past half year, stated that the number of students was 2895, including 508 at the College of Technology, 654 women, and 9000 ex-Service students. He said that in carrying out ordinary duties the University was faced by a large annual deficit. The appeal fund had so far only yielded £220,000, a sum far short of the half-million asked for. A good lead had been given by Oldham (£8353) and Stalybridge (£3607). Some of the grants from local authorities had been increased. Comparing the responses at Liverpool with those at Manchester, the Vice-Chancellor said that Manchester had been badly beaten by Liverpool, whose appeal fund had reached £300,000. It was resolved to confer the honorary degree of D.Sc. on Professor C. S. Sherrington.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—Licences to practise Physic have been granted to the following candidates:—

*Dulcie S. Adkins, Royal Free; Samuel E. Amos, St. Thomas's; Lyon H. Appleby, London; George Armitage, Leeds; Frederick Back, St. Thomas's; Edward T. Bailey, Middlesex; Francis G. L. Barnes, St. Bart.'s; Geoffrey M. F. Barnett, New Zealand and Middlesex; Sydney H. Barnett, Cambridge and St. Thomas's; Davis E. Bedford, Middlesex; Kaikhushroo Maneckji Bharucha, Bombay and London; Frank A. Bryning, King's College; *Mary Burfield, St. Mary's; Samuel B. Chambers, Charing Cross; Philippe Conacaud, Guy's; Frederick C. Cozens, Cambridge and St. Bart.'s; Herbert A. Crowther, Cambridge and Guy's; Carl K. Cullen, London; Charles B. Dansie, King's College; Fernand Edouard Camille Devegney, Geneva; Irving G. de Zilva, Madras; Charles F. T. East, Oxford and King's Coll.; *Keridwen St. Valentine Edwards, Cardiff and Univ. Coll.; Guy W. Elkington, Guy's; Ralph W. Fairfax, Charing Cross; Sadik Farris, Liverpool; *Katherine M. L. Gamgee and Arthur J. Gardham, and *Janet K. Gatty, Univ. Coll.; Werner Göthe, Middlesex; John B. Gregor, Guy's; Simon Grossman, Edinburgh and Middlesex; Alan B. Hacking, Middlesex; William B. Hargreaves, Manchester; *Eleanor Harse, Royal Free; William E. Hayes, Oxford and St. Bart.'s; Strafford S. Hewitt, St. Mary's; Joseph W. Hirst, Cambridge and King's Coll.; Reginald W. P. Hosford, St. 4 Bart.'s; *Margaret O. Howell, Cardiff and Univ. Coll.; Bryan L. Jeaffreson, St. Bart.'s; William D. Jenkins, Middlesex; David E. Jones, Cardiff and St. Bart.'s; James T. Jones, Guy's; Mohammed Kamil, Middlesex; George W. Karunaratna, Cambridge and Middlesex; *Mary E. Kennedy, Cambridge and London; Morris Korn, London; John H. Le Brasseur, Cambridge and St. Bart.'s; Robert Lee-Michell, McGill and Middlesex; *Bessie Levin, Univ. Coll.; Charles G. Lewis, Birmingham and Univ. Coll.; Edmund O. Lewis, Cambridge and Univ. Coll.; William B. A. Lewis, Cambridge and St. Bart.'s; Evan T. Lloyd, Guy's; John R. Lund, Cambridge and St. Thomas's; Christopher H. Macklin, Middlesex; *Dorothy McNair, Royal Free; *Henrietta A. C. Main, St. Mary's; Sytze E. J. Miedema, Amsterdam and St. Bart.'s; *Sybil G. Mocatta, St. Mary's; John C. R. Morgan, Westminster; Bertram S. Nissé, London; Geoffrey Noott, Guy's; Montague M. Ostrowick, Edinburgh; Rupert J. Parry, Univ. Coll.; Eric F. Peck, Liverpool and St. Bart.'s; Frederick A. Phillipps, St. Thomas's; *Marjorie Pierce and *Cassie Ethel Pratt, Royal Free; William S. Ratnavale, Calcutta and London; Howard L. Rayner, Oxford and King's Coll.; Andrew McKie Reid, Liverpool; John Reith, Oregon and Univ. Coll.; *Edith M. Rooke, Royal Free; Frederick M. Rossiter, Michigan, Rush, Penn., and Univ. Coll.; Charles I. Schiff, London; Carl G. Schoneboom, Groningen and St. Bart.'s; *Margaret Scott-Moncrieff, Univ. Coll.; George Selvaratnam Sinnatamby, Ceylon; Henry L. Slaughter, St. Thomas's; *Elfrida E. A. Spencer, Charing Cross; Harold E. Suter, St. Mary's; Edward Tagoe, Cambridge and Univ. Coll.; Harold B. Taylor, St. Mary's; Horace W. Taylor, Manchester; Clement P. Thomas, Westminster; Eric W. C. Thomas, St. Bart.'s; Bernard W. Thompson, Cambridge and St. Bart.'s; Frederick H. W. Tozer and John P. Traylen, London; Frances I. G. Tweedie, Cambridge and St. Thomas's; William G. D. H. Urwick, St. Bart.'s; *Mary G. Vaughan, King's Coll.; Horace S. Ward, Leeds; *Mildred Warde and Joan M. R. Warwick, Royal Free; Joseph F. Weakley, Univ. Coll.; Robert A. Webb, Johns Hopkins and Middlesex; *Agnes E. Westwood, St. Mary's; Henry L. Willey, Cambridge and St. Thomas's; David C. Williams, London; and *Constance M. Willis, St. Mary's.

* Under the Medical Act, 1876.

LITERARY INTELLIGENCE.—**Messrs. William Hodge** and Co. will shortly publish in the well-known series of Notable British Trials a volume dealing with the case of Burke and Hare, edited by Mr. William Loughead.

LONDON HOSPITAL MEDICAL COLLEGE.—**The** Schorstein memorial lecture will be delivered by Dr. A. G. Gibson on Friday, June 3rd, at 4 P.M., in the anatomical theatre of the College. The subject will be Chronic Inflammatory Diseases of the Spleen. Members of the profession are invited to attend.

ROYAL INSTITUTION.—**A general meeting of the** members of the Royal Institution was held on May 9th, Sir James Crichton-Browne, treasurer and vice-president, in the chair. Sir J. J. Thomson was elected honorary professor of natural philosophy, and Sir Ernest Rutherford professor of natural philosophy. The Friday evening discourse on May 20th will be delivered by Professor E. H. Starling, F.R.S., on the Law of the Heart.

QUEEN'S HOSPITAL FOR CHILDREN.—**A course of** post-graduate lectures, free to practitioners and students of medicine, has been arranged for May and June and will be held in the board room of the hospital, Hackney-road, Bethnal Green, London, E. The first lecture will be given on Thursday, May 19th, at 4 P.M., by Mr. B. Whitchurch Howell, the subject being the Principles of Orthopædic Surgery (illustrated by cases). Subsequent lectures will be announced in our Medical Diary.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES.—A large number of acceptances have been received for the annual dinner of the Federation at the Café Royal on Thursday, May 26th. Dr. Addison, the first Minister of Health, and his successor, Sir Alfred Mond, have both accepted invitations to be present. As Monday, May 23rd, is the last day on which applications for tickets, price 12*s.* 6*d.*, exclusive of wine, can be received, members of the medical profession are asked to make early application, stating whether they wish to bring any guests and enclosing a remittance.

DONATIONS AND BEQUESTS.—**Sir John O. S.** Thursby, of Burnley, left £5000 to the Burnley District Nursing Association and £2500 to the Victoria Hospital, Burnley.—Under the will of the late Mrs. Julia Norman, of Brunswick-terrace, Hove, who has left an estate of the value of £36,147, with net personalty £17,396, the testatrix divides the bulk of her property between the Putney Hospital, Lower Common, Putney, and the Royal Hospital for Incurables, Putney Heath.

GENERAL MEDICAL COUNCIL.—The summer session of the Council will commence at 2 P.M. on Tuesday, May 24th, when the President, Sir Donald MacAlister, will take the chair and give an address. The Council will continue to sit from day to day until the termination of its business.

MEDICAL SOCIETY OF LONDON.—Lord Dawson of Penn will deliver the annual oration on Monday, May 23rd, at 9 P.M., on "The Colon and Colitis." A conversazione will follow the oration.

ABERDEEN UNIVERSITY CLUB, LONDON—The bi-annual dinner of the club is to be held on Thursday, May 19th, at 7.30 P.M., at the Criterion Restaurant, Professor J. A. MacWilliam in the chair. The secretary, Dr. W. A. Milligan, 11, Upper Brook-street, W.1, will be glad to hear from any Aberdeen graduates who would like to be present.

LIVERPOOL MEDICAL INSTITUTION WAR MEMORIAL.—On May 11th the Bishop of Liverpool unveiled a tablet, the gift of the ex-President, Mr. W. Thelwall Thomas, in memory of members and associates of the Liverpool Medical Institution who gave their lives in the Great War.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—It is proposed to resume the annual dinner of the Society this year in June, but the dinner will not be held unless at least 20 members signify their intention to be present. Members who would like to attend are asked to communicate not later than May 27th with the hon. secretary, Dr. C. J. B. Buchan, 326, Brownhill-road, Catford, London, S.E. 6.

THE RETREAT (MENTAL HOSPITAL), YORK.—Dr. Bedford Pierce is resigning his position as medical superintendent of this hospital at the end of the year, after nearly 30 years' service. The committee of management have appointed as his successor Dr. Henry Yellowlees, at present the senior physician and deputy physician-superintendent of the Royal Edinburgh Asylum, Morningside.

FRIENDS' EMERGENCY AND WAR VICTIMS' RELIEF COMMITTEE.—The seventh report, just issued, covers the period from April 1st, 1920, to the end of March, 1921. In Austria, Poland, Germany, and Russia distress has been helped by the distribution of clothing and food, grants in kind to children's institutions, the importation of cows to increase the milk-supply for under-nourished children, by the feeding of students and the sale of clothing at reduced prices to impoverished middle-class people, and in other ways. In France the work has been closed down, but the Maison Maternelle de la Marne, the only institution in France devoted to the health and convalescence of mothers and babies, remains as a memento of the Committee's work. The total expenditure of the Committee for the year 1920–1921 was £700,000, the expenses for administration amounting to £18,500, or 2·67 per cent., a very modest figure. The address of the Relief Committee is 27, Chancery-lane, London, W.C. 2.

URBAN VITAL STATISTICS.

Irish Towns (Week ended April 30th).—The 141 deaths in Dublin corresponded to an annual rate of 17·4, or 1·0 per 1000 below that recorded in the previous week, and included 4 from infantile diarrhœa, and 1 each from measles and scarlet fever. The 133 deaths in Belfast were equal to a rate of 16·5 per 1000, and included 10 from whooping-cough.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.
A Practical Medical Dictionary. By T. L. Stedman, M.D. 6th revised ed. xii. + 1144. 42*s.*
Indispensable Orthopædics. By F. Calot. 2nd English ed. Translated from the French by A. H. Robinson, M.D. Pp. xii. + 1108. 42*s.*
Aids to Chemistry. By W. Partridge, F.I.C. Pp. 280. 6*s.*
Barrier Charts for Health Officers. By S. H. Dukes, M.B. 3*s.* 6*d.*

BELL, G., AND SONS, London.
The Acquisitive Society: An Analysis of the Deeper Causes of Social and Industrial Unrest. By R. H. Tawney. Pp. 242. 4*s.* 6*d.*
Laboratories: Their Plannings and Fittings. By Alan E. Munby, F.R.I.B.A. With Historical Introduction by Sir A. E. Shipley. Pp. 220. 25*s.*

CAMBRIDGE UNIVERSITY PRESS, London.
Side Lights on the Evolution of Man. By Karl Pearson, F.R.S. Pp. 27 and Plates. (Eugenics Lecture Series XIII.) 3*s.*

CHURCHILL, J. AND A., London.
Critical Microscopy: How to Get the Best out of the Microscope. By A. E. Coles, M.D. Pp. 98. 7*s.* 6*d.*
Regional Anatomy. By T. B. Johnston, M.B., Ch.B. Pp. 438, 12*s.* 6*d.*
The Formation of Colloids. By Prof. The Svedberg. Pp. 127. 7*s.*
Notes on Diseases Treated by Medical Gymnastics and Massage. By Dr. J. Arvedson. Translated by Mina L. Dobbie, M.D. Pp. 280. 8*s.* 6*d.*
A Text-book of Botany for Medical and Pharmaceutical Students. By J. Small, D.Sc. Pp. 681. 25*s.*

HOEPLI, ULRICO, Milan.
Come Prolungare la Vita: Studio dei Mezzi per Combattere la Vecchiaia Precoce. Per Prof. G. Galli. Pp. xvi. 310. Legato L.12.50.

KARGER, S., Berlin.
Die Geschlechtskrankheiten und ihre Folgen. Allgemeinverständliches Taschenbuch für Jedermann. Von Dr. med. Hans Burkhard. Pp. 87.
Die Therapie der Placenta Praevia. Von Prof. Dr. F. Hitschmann. Pp. 174.
Ueber die Entwicklung und den Ausbau der suprasymphysären Schnittentbindung an der Universitäts-Frauenklinik Tübingen. Von Dr. Emil Vogt. Pp. 115.
Syphilis und Nervensystem: Ein Handbuch in Zwanzig Vorlesungen für Praktische Arzte, Neurologen und Syphilidologen. Von Dr. Max Nonne. Pp. 1019.

KIMPTON, HENRY, London.
Roentgen Interpretation: A Manual for Students and Practitioners. By G. W. Holmes, M.D., and H. E. Ruggles, M.D. 2nd ed., revised. Pp. 228. 18*s.*

LA NOUVELLE REVUE, Paris.
L'Exemple de Florence Nightingale. By M. C. D. Morris. Pp. 14.

LEWIS, H. K., London.
Types of Mental Defectives. By M. W. Barr, M.D., and E. F. Maloney, A.B. Pp. x. + 180. 16*s.*

LIPPINCOTT, J. B., COMPANY, London and Philadelphia.
International Clinics. Edited by H. R. M. Landis, M.D., and Others. Vol. IV., Thirteenth Series, 1920. Pp. 309.
Publications from the Dermatological Research Laboratories of Philadelphia. Vol. II., 1920. (Collected Reprints.)

LIVINGSTONE, E. AND S., Edinburgh.
A Text-book of Medical Jurisprudence and Toxicology. By J. Glaister, M.D. 4th ed. Pp. 902. 30*s.*
A Manual of Surgical Anatomy. By C. R. Whittaker, F.R.C.S. Ed. 3rd ed. Pp. 430. 15*s.*

LONGMANS, GREEN, AND CO., London, New York, and India.
Relativity: The Electron Theory and Gravitation. By E. Cunningham, M.A. 2nd ed. Pp. 148. 10*s.* 6*d.*
The Rhythmic Dance Book. By Margaret Einert. Pp. 96. 4*s.* 6*d.*

Communications, Letters, &c., to the Editor have been received from—

A.—Adelaide, Central Board of Health, Chairman of; Dr. E. E. Atkin, Lond.; Auxiliary Royal Army Medical Corps Funds, Lond., Sec. of.
B.—Lt.-Col. Sir J. Barrett, Melbourne; Dr. A. Balfour, Port Louis, Mauritius; Mr. W. V. Ball, Lond.; Dr. H. Barwell, Lond.; Messrs. P. Blakiston's Son and Co., Philadelphia; Mrs. B. S. Barnes, Barnard Castle; Mr. P. Braybrooke, Surbiton.
C.—Dr. C. Coombs, Bristol; Mr. C. H. Carroll, Lond.; Mrs. A. B. Cunning, Lond.; Mr. W. F. Cooper, Lond.; Dr. P. J. Cammidge, Lond.; Miss C. M. Cowdroy, Lond.; Chadwick Trust, Lond.; Central Midwives Board, Lond., Sec. of; Dr. H. P. Cholmeley, Forest Row; Dr. F. J. H. Coutts, Lond.
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E.—Lt.-Col. R. H. Elliot, Lond.
F.—Federation of Medical and Allied Societies, Lond., Sec. of; Friends' Emergency and War Victims Relief Committee, Lond.; Dr. J. G. Forbes, Lond.
G.—Dr. G. Graham, Lond.; Lord Gorell, Lond.; Mr. J. Galt, Hull; Dr. P. Gully, Leysin; Mr. H. Gilford, Reading.
H.—Mr. H. W. Hardy, Lond.; Mr. C. E. Hecht, Lond.; Messrs. William Heinemann (Medical Books), Ltd., Lond.; Dr. A. F. Hurst, Windsor Forest; Dr. B. Hood, Lond.; Harveian Society, Lond.; Dr. W. J. Howarth, Lond.; Mrs. A. E. Hornibrook, Lond.; Mr. A. H. Hutton, Cookridge; Dr. J. I. Halstead, Burnley; Messrs. W. Hodge and Co., Edinburgh.
I.—Indian Medical Service, Officers of, Lond.; *Illuminating Engineer*, Lond.
J.—*Journal of the American Medical Association*, Chicago.
K.—Dr. T. R. Kenworthy, Shipley; Dr. W. H. Kesteven, Kingston Hill.
L.—Dr. C. Lillingston, Gorleston; Dr. H. E. Littledale, Charing; London Lock Hospital, Sec. of; London Hospital Medical College, Sec. of; Dr. A. Lama, Bologna.
M.—Dr. J. A. Murray, Lond.; Mr. A. S. Matthews, Bath; Ministry of Health, Lond.; Medical Institution, Liverpool; Dr. J. Manoukhine, Paris; Dr. H. E. Mackenzie, Leeds; Meteorological Office, Lond.
N.—National Housing and Town Planning Council, Lond.; New York Academy of Medicine, Health Committee of; National Council for Combating Venereal Diseases, Lond.; Marquess of Northampton, Lond.
P.—Dr. J. J. Paterson, Maidenhead; Mr. C. Payne, Nottingham; Dr. V. Pauchet, Paris; Dr. B. T. Parsons-Smith, Lond.
Q.—Queen's Hospital for Children, Lond.
R.—Mr. F. Robertson, Nuneaton; Royal Society, Lond.; Dr. J. D. Rolleston, Lond.; Royal Society of Tropical Medicine and Hygiene, Lond., Sec. of; Royal Free Hospital, Lond.; Royal Institution of Great Britain, Lond.; Prof. S. Russ, Lond.
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U.—University of London, Principal Officer of; University of Bristol.
V.—Dr. S. G. Vinter, Torpoint.
W.—Mr. A. J. Walton, Lond.; Dr. H. M. Woodcock, Walton-on-Thames; Dr. W. H. Wynn, Birmingham; West London Hospital Post-Graduate College; West Kent Medico-Chirurgical Society, Lond., Hon. Sec. of; Dr. J. Walker, Lond.; Mrs. I. Watson, Shere; Dr. E. W. A. Walker, Oxford; Dr. R. R. Walker, Lochgilphead; Dr. G. Ward, Sevenoaks; Dr. E. H. Worth, Lond.; Messrs. Watson and Sons, Lond.; Mr. C. H. Whiteford, Plymouth.
Y.—Mr. C. Yeomans, Sheffield.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, May 18th.

SECTION OF HISTORY OF MEDICINE: at 5 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.
Paper:
Dr. Charles G. Cumston (Geneva): A Brief Historical Summary of the Treatment of Trachoma, with Special Reference to the Arabian School and the Writings of Ali-Ibu-el-Aissa.

SECTION OF SURGERY: at 5.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.
Exhibition:
There will be an exhibition of Specimens of Interesting Diseases and Tumours of Bone.

Thursday, May 19th.

SECTION OF DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Annual General Meeting—Election of Officers and Council for 1921-1922.
Cases: The following will be shown by—
Dr. Stowers: Effect of Brass Paste in the Treatment of a Case of Tuberculosis of the Skin.
Dr. H. W. Barber: (1) Epidermolysis Bullosa; (2) Multiple Rodent Ulcer; (3) Diphtheroid Infection of the Skin.

Friday, May 20th.

SECTION OF OTOLOGY: at 5 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.
Demonstration:
Mr. J. S. Fraser: Demonstration on the Pathology of Deaf-Mutism.
Paper:
Mr. F. J. Cleminson: Sinusitis in Children.
Specimens:
Mr. Harry Brock: Exhibition of Casts of Congenital Malformations of the Ear and Artificial Ears.

SECTION OF ELECTRO-THERAPEUTICS: at 8.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.
In consequence of the present industrial unrest the Council has decided not to hold the usual dinner this year. Instead of this there will be a clinical evening of an informal nature. The subject for discussion will be "The Stomach," opened by the President and Dr. Knox. There will also be a demonstration of the Potter-Bucky Diaphragm.
Any Member desirous of taking part in the discussion or who wishes to show skiagrams, &c., is requested to give notice to the honorary secretary, Dr. Stanley Melville, 9, Chandos-street, W. 1, at as early a date as possible.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, at 11, Chandos-street, Cavendish-square, W.
FRIDAY, May 20th.—7.45 P.M., Microscopic Demonstrations. 8.15 P.M., Papers:—Lieut.-Col. H. Kirkpatrick, I.M.S. (retd.): Some Points on Trachoma. Dr. C. H. Marshall: A New Method of Treatment of Human Trypanosomiasis. Mr. C. França: An Early Portuguese Contribution to Tropical Medicine.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
TUESDAY, May 17th.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Morton: X Ray Department. Dr. Pernet: Skin Department. 5 P.M., Lecture:—Dr. Burnford: Infective Endocarditis.
WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 2 P.M., Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. Owen: The Treatment of Nephritis. (II.)
THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon, Dr. S. Pinchin: Disease of the Heart. 2 P.M., Mr. B. Harman: Eye Department. Mr. Baldwin: Orthopædic Department. 5 P.M., Special Lecture:—Sir R. Armstrong-Jones: The Analysis of Mind and the Value of Psychotherapy (open to all medical practitioners).
FRIDAY.—10 A.M., Dr. G. Stewart: Neurological Demonstration. 12.15 P.M., Dr. Burnford: Applied Pathology. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. Dr. Pritchard: Visit to Medical Wards. 5 P.M., Lecture:—Mr. MacDonald: Sexual Disabilities in the Male.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.
Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.
MEDICAL SCHOOL.
TUESDAY, May 17th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Dr. Risien Russell (Lecture Room): Demonstration of Cases.
THURSDAY, May 19th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Mr. Scott: Investigation of Cases of Vertigo.
FRIDAY, May 20th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Dr. Grainger Stewart: Spinal Caries.
Fee for Post-Graduate Course £7 7s. C. M. HINDS HOWELL, Dean.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Turner-street, Mile End, E.
Courses of Lectures:—
A Course of Fourteen Lectures on Psycho-Neuroses, to be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open to Students of the Hospital and to Members of the Profession.
TUESDAY, May 17th.—5.15 P.M., Lecture V.:—Conflict and Repression.
FRIDAY.—5.15 P.M., Lecture VI.:—Symbolism; Displacement of Affect.
Advanced Lectures in Physiology, to Students of the University and to others interested in the subject.
A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.
THURSDAY.—4.30 P.M., Lecture II.

ST. BARTHOLOMEW'S HOSPITAL (UNIVERSITY OF LONDON), West Smithfield, E.C.
A Course of Eight Advanced Lectures in Physiology, to be given in the Physiological Laboratory, to Students of the University and others interested in the subject.
TUESDAY, May 17th.—4.30 P.M., Lecture III.:—Dr. J. Barcroft: Alpinism.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN (UNIVERSITY OF LONDON), Hunter-street, W.C.
Post-Graduate Course of Instruction in Treatment of Venereal Diseases.
A Course arranged by the London (Royal Free Hospital) School of Medicine for Women, the Royal Free Hospital, the Elizabeth Garrett Anderson Hospital and the London Lock Hospital, for the instruction of qualified medical women in the Treatment of Venereal Diseases. The Course will extend over two weeks.
TUESDAY, May 17th.—10 A.M., Introductory Lecture—Mr. J. E. R. McDonagh: Some Aspects of the Venereal Problem (at 8, Hunter-street, W.C.) 2 P.M., Mr. C. Gibbs: Clinical Demonstration and Visit to Wards (at the Female Lock Hospital, Harrow-road). 6.30 P.M., Dr. Ruth Balmer: Out-patient Cliniques for Women and Children (at the Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.)
WEDNESDAY.—11 A.M., Dr. D. Thomson: Pathological Lecture and Demonstration (at the London Lock Hospital, 91, Dean-street, W.) 3.30 P.M., Mr. J. E. Lane: Clinical Demonstration by and Visit to Wards and Out-patient Department (at the London Lock Hospital, Harrow-road).
THURSDAY.—2 P.M., Mr. J. E. R. McDonagh: Clinical Demonstration by and Visit to Wards (at the London Lock Hospital, Harrow-road). 5 P.M., Mrs. Rorke, M.B.: Injections (at the Royal Free Hospital, Gray's Inn-road).
FRIDAY.—10 A.M., Mrs. Rorke, M.B.: Treatment Ante-natal Cases (at the Royal Free Hospital). 5 P.M., Mr. J. J. Abraham: Clinical Demonstration, Injections, and Out-patient Clinique for Women and Children (at the London Lock Hospital, 91, Dean-street, W.). 6.30 P.M., Dr. Ruth Balmer: Out-patient Cliniques for Women and Children (at the Elizabeth Garrett Anderson Hospital).

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.
A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.
FRIDAY, May 20th.—5.15 P.M., Lecture III.: Conscious Mental Methods; Persuasion; Suggestion; Hypnosis; Faith-healing; Quackery.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the Bacteriological Department.
A Course of Lectures on Pathological Research in its Relation to Medicine, open to all Members of the Profession and Students.
THURSDAY, May 19th.—4.30 P.M., Dr. H. H. Dale: Anaphylaxis and Immunity.

CHADWICK PUBLIC LECTURE, in the Lecture Room, Medical Society of London, 11, Chandos-street, Cavendish-square, W.
THURSDAY, May 19th.—5.15 P.M., Dr. W. Hunter: Fevers in England—their Prevention and Control, with Special Reference to the Effects of Public Health Acts (1848-1918). Lecture III., Period 1891-1920—Compulsory Notification and Isolation.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
FRIDAY, May 20th.—9 P.M., Discourse:—Prof. E. H. Starling: The Law of the Heart.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
Special Course of Lectures in Gynæcology.
WEDNESDAY, May 18th.—11 A.M., Demonstration Operations.
THURSDAY.—4.30 P.M., Lecture VI.:—Dr. A. C. Magian: Parasites of the Genital Tract.

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OUTLINE OF A SCHEME TO FINANCE THE VOLUNTARY HOSPITALS OF LONDON.

BY W. MCADAM ECCLES, M.S., M.B., F.R.C.S.

THE committee appointed by Dr. Addison to look into and report on the finances of the voluntary hospitals strongly urged[1] the retention of the voluntary system of finance and management. King Edward's Hospital Fund for London has come to the same conclusion,[2] and with this two-fold decision most of the lay authorities and medical staffs of the hospitals concerned agree. The problem, therefore, is how to maintain voluntary contributions so that voluntary management may remain.

In 1920, 113 London general and special voluntary hospitals spent nearly £3,000,000, while their income fell short of this by some £500,000. With this deficit unchecked the road to bankruptcy is sure. Since 1911 these voluntary hospitals have been treating without payment as in-patients persons insured under the National Health Insurance Acts. Meanwhile the approved societies have been accumulating funds, possibly amounting to £7,000,000. Lord Cave's Committee suggested that some of this accumulation should be disbursed in grants to the voluntary hospitals, but it is doubtful whether the approved societies could or would part with the money in this manner. The societies are, however, desirous of providing extra "benefits" for their members.

Wider Application of the Sussex Scheme.

In January of this year a scheme devised by Dr. Gordon Dill of Brighton was started in Sussex and is proving remarkably successful. Its application to London, and possibly to the whole of England, is now under consideration. In brief, it is as follows: All those whose incomes do not exceed £250 a year can become members by subscribing £1 per annum (equivalent to 4·6*d.* per week); a married couple without children, whose combined income does not exceed £400 a year, can both be members for the subscription of £1 10*s.* for the two; and married persons with children under 16 years of age, whose combined income does not exceed £500, can themselves and their children all become members for an inclusive subscription of £2. For this yearly voluntary subscription the following facilities are to be arranged:—

1. Consultations in the patients' own homes, when too ill to leave them. Consultations separate from other patients at the cooperating hospitals.
2. A motor ambulance service.
3. In-patient hospital maintenance and treatment.
4. Dental treatment.
5. Laboratory investigations, X ray, electrical, and massage treatment.
6. Nurses' services in the homes.

Access to all the facilities will be available only on the application of the patient's own general practitioner, and with the approval of the members of the hospital staff concerned.

Budget as Applied to London.

It is estimated that in the area of the Metropolitan and City Police districts there are some 5,000,000 persons, men, women, and children to whom the scheme applies. If all these joined as individuals, married persons, or families, the resulting income would be about £3,000,000 per annum. If as a basis for calculation it is assumed that sufficient persons join to produce an income of £1,200,000 this might be allotted as follows:—

	£		£
Hospitals, 52/80 (including 25 per cent. to medical staff fund, £195,000) ...	780,000	Visiting consultants, 8/80	120,000
500 nurses, 6/80	90,000	Administration, 3/80 ...	45,000
30 ambulances, 2/80	30,000	Reserve, 9/80	135,000
			£1,200,000

From these figures it will be seen that—

(1) The hospitals would receive £585,000 net, or £85,000 over and above their deficit in 1920.

(2) The medical staff fund would amount to £195,000, which would be administered in any way the staffs attached to the hospitals determined. From part of this comparatively large fund a really well-organised post-graduate medical school in London might be financed.

(3) 500 nurses at £180 each per annum could be provided.

(4) 30 motor ambulances, each provided with two skilled men and costing £1000 per annum, could be at the service of the general practitioner and the hospitals.

(5) 38,000 consultations in the patients' own homes at £3 3*s.* could be provided for.

(6) The cost of administration and reserve contingencies are well covered.

The Advantages of the Scheme.

Great advantages lie in the scheme, some of which may be mentioned—namely, (*a*) to the *prospective patient*: (1) Provision made during health; (2) free consultations at home; (3) no payment for hospital maintenance or treatment during illness; (4) freedom for almoner's investigation; (5) dental treatment; (6) ambulance service; (7) the feeling of satisfaction that his subscription is of help to others less fortunate.

(*b*) To the *hospital*: (1) Maintenance of the voluntary system, both of income and management; (2) an adequate income; (2) freedom from necessity of making appeals.

(*c*) To the *general practitioner*: (1) All the arranged facilities will be obtainable only through the general practitioner; (2) much saving of anxiety by being able to arrange a consultation free of charge; (3) can maintain more direct contact with his patient; (4) can obtain promptly many facilities hitherto difficult or costly to procure.

(*d*) To the *consultant members* of the medical staff of the voluntary hospitals: (1) A medical staff fund of 25 per cent. of the money received by the hospital; (2) a fund from which consultants will be paid for consultations at patients' own homes; (3) more direct relationship with general practitioners.

(*e*) To the *nation*: (1) The maintenance of the voluntary system; (2) the prompter treatment of cases of serious illness needing in-patient hospital treatment, with corresponding saving of life and shortening of convalescence; (3) the maintenance of a supply of clinical material for medical and nursing education in the schools.

Some Objections to be Met.

Some cogent objections have been levelled at the scheme. The *first* is that it would not be successful because there is not enough inducement to make a sufficient number join to produce at least £1,200,000 a year. This may be answered by stating that the facilities offered are greater than those at present obtainable, and all these facilities will be obtained free at the time required. Further, the voluntary hospitals may have to say in the future that they can only treat without payment the really necessitous poor and members of the scheme.

Secondly, it may be thought that if the scheme is successful it would greatly diminish the number of the ordinary voluntary and other subscriptions. This would probably be true, but the gain in income would completely counterbalance this loss, and the more so the greater the success of the scheme. If £3,000,000 came in from subscribers to the scheme this would cover the whole of the yearly cost of the hospitals in London. Again, it is stated that if the scheme is successful it would necessitate additional beds, but if successful to this extent there would be money enough to provide the extra accommodation.

And, *lastly*, it is argued that the cost of running the scheme would be great. This is true, but not a penny of it would fall upon the hospitals, and the greater the success of the scheme the less proportionately would be the cost of administration.

No scheme put forward appears to have all the merits of this particular one conceived by Dr. Gordon Dill. If a success, it would be a tremendous boon; if a failure, it can hardly leave the voluntary hospitals worse off than they are. The approval and cooperation of the lay authorities of the hospitals, the medical staffs, the general practitioners, the approved societies, and the persons who may need the facilities should ensure the abundant success of the scheme.

[1] Interim Report, March 8th, 1921.

[2] Interim Report of the King's Fund Policy Committee, April 12th, 1921.

PUBLIC HEALTH OF SEYCHELLES.

IN his report for 1919 the Governor, Sir Eustace Fiennes, states that the population of the colony is now estimated at 24,653. The birth-rate for the year was 25·19 and the death-rate 16·84 per 1000. There was an epidemic of influenza which affected the majority of the population and caused 115 deaths. There was also an epidemic of dengue fever. It was noticed that the number of cases of lobar pneumonia had considerably increased. During the year the lepers were brought from Round Island, Praslin, 35 miles away, to Round Island, Mahe, where they are now comfortably housed in good quarters and are well cared for, the doctor making regular visits to the island. The in-patients treated at Victoria Hospital in 1919 numbered 723, and 4739 persons were treated at the dispensaries. The rainfall was considerably higher than in 1918, being 101·03 inches; rain fell on 135 days.

THE STABILITY AND INFLUENCE OF THE ANTI-SCORBUTIC VITAMIN.

THE vulnerability of the anti-scorbutic vitamin has been the subject of many researches, and recently this question has attracted considerable attention in the United States. In 1918 M. H. Givens and H. B. McGlugage showed that the raw tomato is an efficient antiscorbutic agent, that this fruit can be subjected to a temperature of 55°–60° C. for 14–24 hours, or 35–40° C. for 36–44 hours and still retain a considerable content of its antiscorbutic vitamin, and that this treated material is still potent after three months ageing. A. F. Hess at the same time proved that canned tomatoes are effective as antiscorbutic agents for children and guinea-pigs even if canned for a year, so that their antiscorbutic value does not diminish appreciably by ageing. Feeding experiments on guinea-pigs determined the effect of heat and age upon the antiscorbutic accessory. It was found that guinea-pigs are protected against scurvy by daily doses of 2·5 g. of fresh raw tomatoes; by 10 g. of fresh raw tomatoes heated one hour at 100° C.; by 2 g. of dried tomatoes heated 15 minutes at 100° C.; by 10 g. of tomatoes canned at 15 pounds pressure for 30 minutes; by 3 c.cm. of commercial canned tomatoes three years old; and by 10 g. of commercial canned tomatoes, three years old, cooked 15 minutes at 100° C. The same observers, with E. G. van Horne, investigated at the University of Rochester the antiscorbutic property of raw, dried, and cooked apples and bananas, the two fruits most generally consumed in the United States by healthy adults, children, and, indeed, by the sick. An attempt to determine quantitatively their antiscorbutic potency in the raw and in the cooked form was made by feeding guinea-pigs on a basal diet adequate in all respects except the antiscorbutic vitamin, with the result that a dose of 10 g. per diem of raw apples or of bananas was found to protect a guinea-pig against scurvy for three months. On the other hand, an equivalent amount of these foods cooked at 100° C. for 15 minutes or dried at 55°–60° C. (with the exception of dried apples, which showed some antiscorbutic potency) or dried at 55°–60° C. and cooked for 15 minutes at 100° C., will not protect the animals against scurvy. The researches of A. F. Hess and L. J. Unger on the destruction of the anti-scorbutic vitamins by oxidation were recalled in THE LANCET of last week.

The pathogenesis of deficiency disease opens up a very wide subject, and the relation of the scorbutic condition to certain of the endocrine glands has been the subject of various investigations. We have already referred [1] to certain observations of V. La Mer and H. L. Campbell on changes in organ weight produced by diets deficient in antiscorbutic vitamin, more especially a pronounced increase in weight of the adrenal glands. These observers do not appear to have paid special attention to the histo-pathological changes occurring in guinea-pigs fed on a scorbutic dietary, but they confirm the earlier observations of R. McCarrison, who has published several papers on the pathogenesis of deficiency disease, not the least interesting of which is No. IV., on the Influence of a Scorbutic Diet on the Adrenal Glands, illustrated with several plates.[2] McCarrison showed that a scorbutic diet gives rise in guinea-pigs to (1) an increase in size and weight of these glands; (2) a marked diminution in their adrenalin content, causing pronounced depreciation in their functional capacity; (3) hæmorrhagic infiltration around the periphery of the adrenal cortex; (4) degenerative changes in the cellular elements of the cortex and medulla. The impairment of adrenal function occurs before clinical evidence of scurvy becomes manifest. It is clear that we are still far from a full knowledge of the far-reaching effects of any one single vitamin in metabolic activity, and much spade-work will have to be done before the relation of vitamins to endocrine glands are laid bare.

CAMBRIDGE MICROTOMES AND RECORDING THERMOMETERS.

List No. 182 of the Cambridge and Paul Instrument Company, Ltd. (45, Grosvenor-place, London, S.W. 1), describes three types of Cambridge microtomes manufactured to meet the requirements of many different classes of work. A new universal microtome offers the advantages of ease of manipulation, rigidity, and continued accuracy, even after considerable wear, which are characteristic of the "rocker," with the additional advantage that it cuts flat sections. It is capable of cutting sections from objects embedded in paraffin or celloidin, or from certain non-embedded objects. Ribbons of sections can be obtained from paraffin-embedded objects. The rocking microtome differs only in minor details from the patterns of previous years. It remains a favourite instrument for cutting sections of paraffin-embedded objects, and with it long ribbons of uniform sections can be produced with ease and rapidity. The freezing microtome is designed for cutting sections of tissues during the progress of surgical operations.

List No. 183 describes instruments designed for the continuous registration of body temperatures, developed as a result of the work of Sir G. Sims Woodhead and Mr. P. C. Varrier-Jones, recorded in our columns ("Investigations on Clinical Thermometry," THE LANCET, 1916, i., 173, 281, 338, 450, and 495). The instruments have proved reliable and easy to manipulate, and of ample sensitivity for the requirements of ordinary practice. The thermometers are of the electrical resistance type, and consist essentially of a bulb containing a coil of platinum wire joined by connecting wires to a recorder which may, if desired, be placed at a considerable distance from the patient.

MOTOR-ESEGO TRICYCLE.

THE machine here illustrated is primarily a standard model hand-propelled tricycle, but fitted with a petrol motor auxiliary unit, giving a speed of 2–15 miles per hour, and an invalid is able to climb hills of any gradient. The engine is easily started by two or three motions of the hand levers, the hand clutch is then released, the propelling levers

The Motor-Esego tricycle in use.

remain stationary, and the machine is under perfect control. One important feature of this machine is that in the event of the motor not functioning for any reason the rider is able to propel the machine home by means of the hand levers.

The machine is manufactured by Carters Ltd., of 125–9, Great Portland-street, London, W. 1.

THE HOMELESS CHILD FOR THE CHILDLESS HOME.

MEDICAL men are occasionally asked by those wishing to adopt children if they know of a suitable orphan or homeless child, and more frequently about the chances of finding foster-parents for an infant whose mother cannot make a home for it. The responsibility of direct introduction of principals is often shirked, while a recommendation to either side of a reputable society who will make the necessary inquiries is an easy and safe procedure. The National Adoption Society (registered as a benevolent society under the Friendly Societies Act) was founded before the war by Rev. W. F. Buttle. The committee includes Lady Dawson of Penn, Dr. Charles Porter, and Lady Ryall, and the honorary medical administrator is Dr. Margaret Rorke. Applications are constantly being received from both parties; those from adopters who require payment or premium are refused. Every home to which a child is sent is visited by a member of the Society. The following general summary for one year gives an idea of the numbers dealt with:—

Applications for adoption	1975
Applications for babies	734
Adoptions completed	204

Further information and application forms are obtainable from the Secretary, National Adoption Society, 2 Baker-street, London, W. 1.

[1] THE LANCET, Feb. 19th, 1921, p. 395.
[2] The Indian Journal of Medical Research, vii., 1919.